22th Years of glorious venture

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Study suggests Ivermectin, a popular anti-parasitic drug, is effective against single strand RNA viruses.[1]

ORION Introduces

Ivermectin

Ivermectin USP 6 mg & 12 mg

99.98% Viral RNA reduction

Committed for a better looking tomorrow

Ensures 5000 fold viral RNA reduction which effectively kills almost all viral particles within 48 hours.[1]

Total patient: 53
Treatment: 5 days Ivermectin group
↓
Afebrile at day 7 respectively [2]

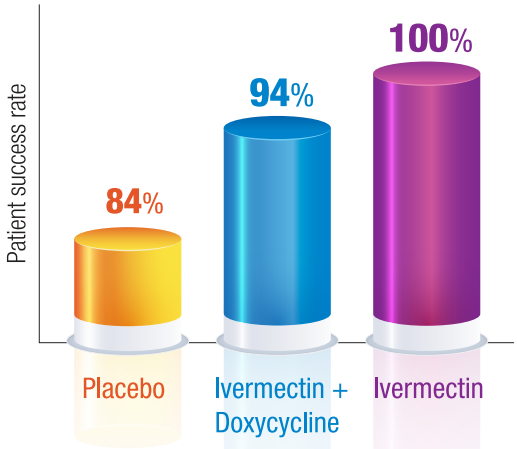

Fig.: Treatment of Patient having Fever

Dose: 12 mg tablet orally for 5 days

Ref.: 1. Elsevier: Antiviral Research 178 (2020) 104787
2. International Journal of Infectious Diseases: //doi.org/10.1016/j.ijid.2020.11.191

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The ORION Medical Journal

22th Years of glorious venture

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Editor's Choice

The Orion Medical Journal is rejoicing 20th years of trust and service to the medical community. The Orion Medical Journal achieves the choice of thousand readers nationally and in the international arena. This medical journal contains information from reputable sources and although reasonable efforts have been made to publish accurate information. Any information or guidance contained in this book is intended for use solely by medical professionals strictly as a supplement to the medical professional's own judgement, knowledge of the patient's medical history, relevant manufacturer's instructions and the appropriate best guidelines.

Editorial article (P-02) of this issue "Strong association of Polycystic varian syndrome (PCOS) with vitamin D deficiency in reproductive age group". This study shows that, vitamin D3 deficiency has a strong correlation with PCOS. Screening and correction of vitamin D3 deficiency may prevent PCOS and its manifestations. Each and Every patients of PCOS should be screened by measuring the level of serum vitamin D3.

The first original article (P-07) "Outcome of primary arteriovenous fistula for hemodialysis: Our experience". The aim of this study was to identify the factors which affecting the postoperative outcomes in primary arteriovenous fistula as Arteriovenous fistula is accepted as optimal form of vascular access for hemodialysis in clinical practice.

Second original article (P-11)"Cervical Thymic Duct Cyst, a rare Cystic Lateral Neck Mass in Children "In this original article a study conducted through a series of cases Due to its rarity, it almost always escapes a correct preoperative diagnosis. CT, MRI, and FNA are all helpful investigations in the diagnosis of cervical thymic cysts, but a definitive diagnosis requires identification of thymic tissue containing Hassall's corpuscles .

Review article(P-17) "Obstetric Near Miss : A new Indicator of Quality of Obstetric Care." This study concluded with Obstetric haemorrhage, severe hypertensive disorders and dystocia are the leading causes of maternal near-miss cases. This reflects largely the reluctant prenatal care seeking behavior and to some extent sub-optimal quality of care.

Case Report (P-22) "Awareness About Breast Cancer Among Women of Reproductive Age Group Attending Out Patient Department of Dhaka Medical College Hospital" This study has been conducted among women of reproductive age to identify the level of knowledge and awareness Among them regarding breast cancer and its prevention, control measures and risk factors.

Observational Study(P-31) "Knowledge Regarding Organophosphorus Poisoning Among Nurses in a Hospital of Siddharthanagar Municipality." This study has been conducted to find out the knowledge regarding organophosphorus poisoning among nurses.

Thanks all of readers, contributors & reviewers for their continued support.

"A kind word is a form of charity." Prophet Muhammad (peace be upon him)

Good health and good sense are two of life's greatest blessings. May the Almighty bless you with good health, give you a healthy life.

DR. SINTHIA ALAM
Chief Editor
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Telemedicine: A natural evolution of Obstetric and Gynaelogical health care system of Bangladesh during COVID-19 pandemic.

Dr. Mala Banik[1]

ABSTRACT

Introduction

The word Telemedicine literally translates to 'healing at a distance'.Here remote diagnosis and treatment of patients is done by means of telecommunication technology. First published record of telemedicine is in the first half of the 20th century when ECG was transmitted over the telephone line. In Bangladesh telemedicine was not so popular as patients prefer face to face visit to a medical practitioner. But in Covid 19 Pandemic, to prevent transmission and Lock down situation telemedicine becomes popular and emerges as a natural evolution of Obstetrics and Gynaecologic health care system in Bangladesh.

The Aim of the stud

To see the outcome of patients taking telemedicine for their Obstetric and Gynaecologic problems. The reasons of seeking consultation through telemedicine are also studied.

Materials and Methods

This is a Cross sectional prospective study was done during Lock down period in Bangladesh.Study period was 27 th March to 20th May.Total 201 women got telemedicine service free of cost via sms, messenger, imo,whatsapp, email using smart phone were included in this study.The data was collected, edited and tabulated by hand tabulation. Calculation was done on scientific calculator.

Results

96.51% patients suffering from Obstetrics and Gynaecological diseases were cured by taking medicine, counselling and assurance through telemedicine. Majority of pregnant women(23.88%) seek telemedicine service for consultation about advice regarding diet, medicine, anxiety about ANC visits. 2.48% women were worried about Tetanus Toxoid vaccine.Women (.99%) suffering from Gynaecological diseases such as Fibroid uterus, Uterine Prolapse were seeking for operation.3.48% women suffereing from DUB and managed by medication . Only 3.48% patients were required to refer to Hospital for Emergency admission.

Conclusion

Telemedicine can't give solution to all problems, but it definitely help in managing women suffering from Obstetric and Gynaecological diseases at a large extent especially during awakward situation like Covid 19 pandemic.

Author & Correspondence

MBBS, FCPS, MS (Gynae)
Associate Professor, Gynae
Sir Salimullah Medical College, Dhaka

INTRODUCTION

World Health Organization(WHO) has defined telemedicine as , the delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities. The word "telemedicine" literally translates to 'healing at a distance'.

The use of medical devices to monitor a patient's health from afar introduces a new level of convenience for both patient and provider. It can serve to supplement in-person visits, creating a more comprehensive treatment plan

HISTORICAL PERSPECTIVE

Earliest published record of telemedicine was in the first half of the 20th century when ECG was transmitted over telephone lines. The first known record of real time video consultation occurred in 1995 by the Doctors at University of Nebraska used interactive telemedcine to transmit neurological examinations. In disaster management, NASA first used telemedicine services during the 1985 Mexico City earthquake and 1988 Armenian earthquake and made a mark in history. In the year 1997 NASA established a comercial space center named MITAC (Medical information and Technology Application Consortium) at Yale University which begins the current trend of using telemedicine in private participation in public health management.

MODERN TELEMEDICINE

Use of wireless broadband technology has become more advanced and mobile phone and internet is widely used nowadays . Patient education with images and videos, transfer of medical images like X-rays and scans, and real-time audio and video consultations became a reality. Improvement in internet infrastructure such as bandwidth communication speeds made e-health and telemedicine stress-free and cost effective. Stepping into 21st century, various national and international organisations are solely providing to telemedicine services. The technology involved in telemedicine allow providers and patients to be almost any where, this is one of the key factors in providing quality health care to the needy.

Advantage of Modern Telemedicine

- It reduces travel expenses.
- Saves time.
- Provides easier access for the common man to specialist doctor.
- It reduces medical costs.
- It also makes the life of healthcare providers easy by decreasing the load of missed appointments and cancellations.
- Can be used during disaster, where all modes of communication is disrupted.

TELEMEDICINE IN BANGLADESH:

First telemedicine was initiated by Swinfen in 1999, which established a link between CRP in Dhaka and a senior medical consultant abroad. In 2008, sim operator company, Banglalink, launched digital health service. And in 2016 another operator company Grammenphone also started the same service. Ministry of health and family welfare launched an official call center named "heath center 16263" on 2016. Telemedicine is not so popular as in developed country, people prefer face to face doctor consultation but due to COVID-19 pandemic large institutions like IEDCR, BSMMU, private hospital and individual consultant are providing telemedicine.

Management of Obstetric and Gynaecological Diseases during Covid 19 Pandemic

According to ACOG(American College of Obstetrics and Gynaecology) and OGSB(Obstetrical and Gynaecological Society Bangladesh) have given a Guideline in management of Obstetric and gynaecological diseases to prevent Covid 19 transmission.They recommend reduction of Face to face ANC visits and encourage the pregnant woman to stay at home and seek for Telemedicine consultation.Pregnant women are advised to go Hospital only in Emergency situation like P/v bleeding, PROM, Labour pain, APH etc.The routine Gynaecological operations are also withheld.Medical mangement are preferred instead of Surgery.

TYPES OF TELEMEDICINE:

Telemedicine can be classified into 5 basic types:

According to the timing of the information transmitted:

- Real time or synchronous telemedicine.
- Store-and-forward or asynchronous telemedicine.
- Remote monitoring type of telemedicine.

According to the interaction between the individuals involved:

- Health professional to health professional.
- Health professional to patient.

MATERIALS AND METHODS

In Bangladesh, first COVID patient was detected in 8th March 2020. And to prevent transmission government declared lockdown from 27th March, people are encouraged to stay home and stay safe. By using smart phone apps video conferencing, SMS, through email, a patient suffering from obstetric and gynaecological disease can consult with me through telemedicine from anywhere and anytime .I was nominated by OGSB for online free consultation during the Lockdown period.

STUDY DESIGN

This was a Cross-sectional, prospective observational study done in Dhaka, Bangladesh. From 27th March to 20th May 2020 during lockdown period due to COVID-19 pandemic.Total 201 patients suffering from obstetric and gynaecological diseases are consulted through telemedicine.

Results:

Table-1: Pregnant Women Seeking Consultation during 1st trimaster			
	n=201		
SI. No.	**Cause**	**No. of Patients**	**Percentage**
01	Patient consult for treatment after urine pregnancy test +ve	16	7.96%
02	S/S Threatened abortion	14	6.96%
03	Termination of unplanned pregnancy (by MRM/MTP)	16	7.96%
04	S/S Incomplete abortion	16	7.96%
05	Changes of medicine from 1st trmaster to 2nd trimaster	12	2.98%
06	Eclopic Pregnancy	2	0.99%

Table-2: Pregnant Women Seeking Consultation during 2nd trimaster			
	n=201		
SI. No.	**Cause**	**No. of Patients**	**Percentage**
01	Advice and Anexiety about ANC visit	48	23.88%
02	Worry about T.T vaccination	10	2.48%
03	Pregnancy with UTI	12	5.97%
04	Pregnancy with Loosemotion	1	0.49%
05	Pregnancy with mild fever	1	0.49%
06	Pregnancy with suspected COVID-19	1	0.49%

Table-3: Pregnant Women Seeking Consultation during 3rd trimaster and PNC			
	n=201		
SI. No.	**Cause**	**No. of Patients**	**Percentage**
01	Planning of place and mode of delivery	33	16.41%
02	Pregnancy with lobour and	1	0.49%
03	APH	1	0.49%
04	38 Weeks Pregnancy with less F.M	1	0.49%
05	35 Weeks Pregnancy with False pain	1	0.49%
06	About contrceptive during PNC	1	0.49%
07	Secondary PPH following NVD	1	0.49%

Table-4: Seeking Consultation of Women suffering from gynecological diseases			
	n=201		
SI. No.	**Cause**	**No. of Patients**	**Percentage**
01	DUB	8	3.98%
02	Infertility	7	3%
03	Known fibriod prolapse uterus seeking for operation	2	0.99%
04	Menopausal hot flush	1	0.49%
05	Vaginal Candidicisis	1	0.49%
06	Know case os servier Endometriosis	1	0.49%
07	Fused labial adhesion	1	0.49%

Table-5: Outcome of Patients after getting Telemedicine			
	n=201		
SI. No.	**Outcome**	**No. of Patients**	**Percentage**
01	Relived by taking medicine and assurance by consultation	94	96.50%
02	Refered to hospital for emergency addmission	7	3%

Following Patients adivised to take emergency addmission:

1. 38 weeks pregnancy with H/O LUCS with pain
2. APH-1
3. Ectopic pregnancy -2
4. 38 weeks pregnancy with less FM-1
5. Secondary PPH-1
6. Pregnancy with fever with suspected COVID-19-1

DISCUSSION

The result of the study shows that 96.51% patients are cured by counseling, assurance and drugs by consultation through Telemedicine. Study of WR HARSH et al shows that in self-monitoring/testing telemedicine for the areas of pediatrics, obstetrics, and clinician-indirect home telemedicine, there is evidence that access to care can be improved when patients and families have the opportunity to receive telehealth care at home rather than in-person care in a clinic or hospital.8

Another study done by Carlo J et al among 80 women of GDM(40 getting telemedicine and 40 control) hypothesized that increased contact and feedback that the enhanced telemedicine system with its new functionality, ease of use, and improved access would increase rates of transmissions among women in the intervention group, leading to better maternal glucose control and fewer adverse pregnancy outcomes.9

As the Covid 19 is a recent situation and the Publications are limited,so the all variables of the study does not match with the other studies.This study shows that 7.96% women seeks for consultation for termination of unplanned pregnancy during Covid 19 pandemic.6.96% and 7.96% women have suffered from Threatened abortion and Incomplete abortion respectively. A report is published based on the estimates of UNFPA, there could be about 7 million unintended pregnancies across the globe due to the coronavirus pandemic, which may lead to thousands of deaths from unsafe abortion and complicated births because of the lack of access to emergency services. Also, one of the main concerns that may emerge are skyrocketing cases of gender-based violence.10

Majority of pregnant women (23.88%) seek consultation due to anxiety about ANC visit, 2.48% women are worried about Tetanus Toxoid Vaccination,16.41% women are anxious about place and mode of delivery as their EDD are coming closer. Study by Varshney M et al shows that Overall approximately one third of respondents had significant psychological impact (IES-R score > 24).11

The women who are known case of Fibroid Uterus, Uterine prolapse seeking for operation (.99%). As there is chance of transmission of Covid 19, they are advised to wait for operation. Study by Sophie M et al shows that the impact of delayed surgical intervention for women with fibroids due to the COVID-19 pandemic and the resulting adverse effects on their mental and physical health.12

CONCLUSION

Telemedicine cannot be the answer to all problems but it can be very important in addressing a vast range of problems. Telemedicine are providing to be wonders in the field of healthcare. Telemedicine has an important role in the situations like COVID19 pandemic. Due to lack of knowledge about the new technology, both by the public and the professionals are holding it back. The need for telemedicine is imperative now more then ever.

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Due to minimum excretion of Linagliptin through kidney, it is considered as safe DPP-4 inhibitor for renal impaired patients.

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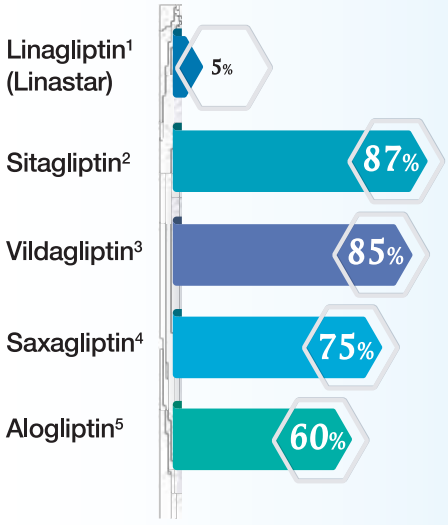
Linastar-5

Linagliptin INN 5 mg

A Potent, Effective & safe DPP-4 Inhibitor

Minimum excretion ensures renal safety



No dose adjustment or drug monitoring required for Linagliptin

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They all require dose adjustment, or are not recommended in patient with renal impairment.

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Linastar-M 2.5/850

Linagliptin INN 2.5 mg &
Metformin HCl BP 850 mg

Ref.:
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Pattern and epidemiology of hemoglobinopathies in northern Bangladesh.

ABSTRACT

Introduction

Inherited genetic hemoglobin disorders are emerging global public health concern all over the world. It is reported that almost 5.2% of the world population (over 360 million) carry a significant hemoglobin variant. Along with 100 million beta thalassemia carriers with a global frequency of 1.5% . The inherited beta thalassemia, sickle cell disease and hemoglobin E (HbE) disorders are the most common single gene disorders globally . In many Asian countries, the most common form of hemoglobinopathies are beta thalassemia and HbE disorder. In the eastern parts of Indian subcontinent, Bangladesh and other Southeast Asian countries, HbE is the most prevalent hemoglobin variant. So thalassemia and other hemoglobinopathies are a significant disease burden for a developing country like Bangladesh.

Objective

Bangladesh lies in the world thalassaemia belt. Despite this fact there is a huge lack of evidence about the epidemiology and clinical aspects of the disease. Our study to identify the pattern and epidemiology of hemoglobinothy and also evaluation of the hematological features in northern Bangladesh.

Methods

This was a cross sectional study conducted between July 2018 to June 2019 in department of hematology, Rajshahi Medical College Hospital, different hospitals and private physicians chamber. Patients were suspected of suffering from anaemia. Blood sample were collected for complete blood count and hemoglobin electrophoresis.

Result

A total of 1320 patients mean age were 22.6 years and 70% of the participants were female. Among the enrolled patients, 389 (29.5%) had hemoglobinopathies. Hb E Trait was the most prevalent hemoglobinopathy (12%) followed by E-β-thalassemia (7.3%), β-thalassemia minor (6.6%) and Hb E disease (2.6%). Other hemoglobinopathies like α and β-thalassemia major, sickle cell disease etc. were quite rare. β-Thalassemia major and E-β-Thalassemia had most severe level of anemia while Hb E trait, Hb E disease and Sickle cell disease had mild to moderate level of anemia.

Conclusion

Understanding the pattern and epidemiology of these diseases can help in policy making to prevent the diseases.

KEYWORDS: Hemoglobinopathy, Northern Bangladesh.

Author

M. Morsed Zaman Miah
Email: drzaman04@gmail.com
Md. Abdur Rafi
Email: abdurrafi007@gmail.com

Correspondence

Dr. M.Morsed Zaman Miah
Assistant Professor of Hematology
Rajshahi Medical College, Rajshahi-6000, Bangladesh.
Email: drzaman04@gmail.com

INTRODUCTION

Inherited genetic hemoglobin disorders are emerging global public health concern all over the world. It is reported that almost 5.2% of the world population (over 360 million) carry a significant hemoglobin variant along with 100 million beta thalassemia carriers with a global frequency of 1.5% (1). An estimated 320,000 babies are born each year globally with a clinically significant hemoglobin disorders. Among them more than 50,000 new patients are born with a severe form of thalassemia (beta-thalassemia major and HbE beta thalassemia) (1). Largest portion of these births occur in underdeveloped and developing countries.

The inherited beta thalassemia, sickle cell disease and hemoglobin E (HbE) disorders are the most common single gene disorders globally (1). Hemoglobinopathies are most prevalent in Africa, all Mediterranean countries, the Middle East, the Indian subcontinent and Southeast Asia. In many Asian countries, the most common form of hemoglobinopathiesare beta thalassemia and HbE disorder. In the eastern parts of Indian subcontinent, Bangladesh and other Southeast Asian countries, HbE is the most prevalent hemoglobin variant (2,3).

Bangladesh lies in the world's thalassemia belt. Despite this fact there is a huge lack of evidence about the epidemiology and clinical aspects of this disease. According to a recent review, the estimated prevalence of beta-thalassemia carriers ranges from 3 to 6% and HbE carriers ranges from 3 to 4% in Bangladesh (3). Another country-wide population based study reported the prevalence of beta-thalassemia trait as 4.1% and HbE trait as 6.1% among (n = 735) school children in Bangladesh (4).Evidence on pattern of clinically suspected hemoglobinopathiesare very few in Bangladesh. A study in this context reported that the most common form of hemoglobin (Hb) disorder is β-thalassemia minor (21.3%) along with E-β-Thalassemia and HbE trait. Other forms of hemoglobin disorders are HbE disease, Hb D/S trait, β-thalassemia major, and δ-β-thalassemia (5).

To date, no productive treatment for patients with beta thalassemia major has been found, except bone marrow transplantation. It is a fact that most children with severe forms of thalassemia (such as thalassemia major) usually die under 5 years of age and the average life expectancy of patients suffering from thalassemias is about 30 years, particularly in heavily resource constrained countries (1,2). So thalassemia and other hemoglobinopathies are a significant disease burden for a developing country like Bangladesh. Understanding the pattern and epidemiology of these diseases can help in policy making to prevent the diseases.

The present study aims to identify the pattern and epidemiology of hemoglobinopathies in Northern Bangladesh.

MATERIALS AND METHODS

This cross sectional study was conducted in the department of hematology of Rajshahi Medical College Hospital (RMCH) from July 2018 to June 2020. All the patients suffering from anemia who visited to the hematology department of RMCH were the study population.The sample size was calculated from the prevalence estimate using the formula: $n=\frac{z^2 pq}{d^2}$, where, where n = number of the sample; z = 1.96 for 95% confidence interval (CI), p = "best guess" for prevalence and d = precision of the prevalence estimate.A recent study has indicated that about 28% of assessed rural women have beta thalassemia or HbE (7). This data provided that 988 samples would be enough for the study. However, assuming non-responding participants we included 1380 patients. Convenient sampling technique according to inclusion and exclusion criteria was used to include patients. Only proven anemic patients (Hb<12g/dL) were included in the study. Pregnant women and anemic patients due to chronic diseases (e.g. CKD, malignancy, etc.) were excluded.

2 ml intravenous blood samples were collected after obtaining informed consent using EDTA (ethylene diamine tetra acetic acid) as anticoagulants by disposable syringes and needles from each individual free of blood transfusions. The Sysmex XE-2100 system Hematology analyzer (Sysmex Corporation, Kobe, Japan) was used to determine peripheral cell count and red blood cell indices (RBC, Hb%, HCT, MCV, MCH, and MCHC) using standard procedure (6) that employed RF/DC detection method, hydrodynamic focusing, flow cytometry method and SLS-haemoglobin method.

Hemoglobin electrophoresis was carried out on CAPILLARYS 2 FLEX-PIERCING instrument uses the principle of capillary electrophoresis in free solution. With this technique, charged molecules are separated by their electrophoretic mobility in an alkaline buffer with a specific pH. Separation also occurs according to the electrolyte pH and electroosmotic flow (6).

All statistical analyses were carried out using SPSS statistical package (version 22.0). Analysis of variance (ANOVA) of the data was used to detect overall difference in group means. Differences among group means were assessed using least significant difference (LSD), p value <0.05.

RESULTS

A total of 1320 patients were included in the study. Their mean age was 22.6 (SD 13.5) years and 70% of the participants were female (Table 1).

Table 1: Age and sex distribution of the patients

Characteristics	N	%
Age (years)		
0-5	27	2.0
6-12	171	13.0
12-17	204	15.5
18-30	613	46.4
31-40	204	15.5
41-50	73	5.5
51-60	11	0.8
>60	17	1.3
Sex		
Male	395	29.9
Female	925	70.1

Among the enrolled patients, 389 (29.5%) had hemoglobinopathies. Hb E Trait was the most prevalent hemoglobinopathy (12%) followed by E-β-thalassemia (7.3%), β-thalassemia minor (6.6%) and Hb E disease (2.6%). Other hemoglobinopathies like α and β-thalassemia major, sickle cell disease etc. were quite rare (Table 2).

Table 2: Pattern of hemoglobinopathies among patients

Characteristics	N	%
No hemoglobinopathy	931	70.5
α-Thalassemia	1	0.1
β-Thalassemia major	1	0.1
β-Thalassemia minor	87	6.6
E-β-Thalassemia	96	7.3
E-β-Thalassemia trait	6	0.5
Hb E disease	34	2.6
Hb E trait	157	11.9
Hb Bart	1	0.1
Hb D	1	0.1
Sickle cell disease	4	0.3
Sickle cell trait	1	0.1

Patients with β-Thalassemia major and E-β-Thalassemia had most severe level of anemia (mean Hb level 6 g/dL and 6.96 g/dL respectively) while Hb E trait, Hb E disease and Sickle cell disease had mild to moderate level of anemia. Descriptions of different Hemoglobin band RBC related parameters are shown in Table 3 and Table 4 respectively.

Table 3: Hemoglobin types among different types of hemoglobinopathies

Hemoglobinopathy	Hb (g/dL)	Hb A (%)	Hb A2 (%)	Hb E (%)	Hb F (%)	Others (%)
No hemoglobinopathy	9.95 (2.60)	96.91 (6.98)	2.39 (1.14)	0.42 (4.48)	0.27 (2.52)	0.01 (0.25)
α-Thalassemia	10.00	48.00	1.00	0.00	51.00	0.00
β-Thalassemia major	6.00	4.00	4.00	0.00	93.00	0.00
β-Thalassemia minor	9.91 (2.11)	93.23 (9.94)	4.95 (0.83)	0.91 (6.11)	0.92 (4.16)	0.00 (0.00)
E-β-Thalassemia	6.96 (2.15)	16.73 (22.03)	4.68 (1.75)	50.2 (19.48)	28.17 (19.05)	0.11 (0.92)
E-β-Thalassemia trait	8.17 (4.07)	72.67 (37.13)	5.17 (0.75)	7.33 (17.96)	15.00 (22.61)	0.00 (0.00)
Hb E disease	9.88 (1.92)	9.15 (27.29)	5.00 (0.95)	83.6 (26.66)	2.15 (2.03)	0.06 (0.23)
Hb E trait	10.87 (2.14)	74.14 (9.41)	2.75 (0.66)	22.7 (9.33)	0.37 (2.01)	0.00 (0.00)
Hb Bart	9.00	98.00	2.00	0.00	0.00	0.00
Hb D	9.00	63.00	4.00	0.00	0.00	34.00
Sickle cell disease	9.75 (2.98)	0.25 (0.50)	2.50 (1.73)	14.7 (14.31)	3.75 (3.59)	79.00 (13.44)
Sickle cell trait	6.00	59.00	5.00	0.00	6.00	30.00

Table 4: RBC parameters among different types of hemoglobinopathies

Hemoglobinopathy	RBC	HCT	MCV	MCH	MCHC	RDW-SD	RDW-CD
No hemoglobinopathy	4.50 (0.74)	35.85 (7.00)	79.52 (11.45)	24.76 (5.46)	30.64 (3.28)	49.43 (167.74)	15.94 (4.36)
α-Thalassemia	3.00	29.00	98.00	32.00	32.00	66.00	19.00
β-Thalassemia major	3.00	27.00	97.00	33.00	34.00	54.00	15.00
β-Thalassemia minor	5.17 (1.11)	34.30 (6.65)	66.32 (11.59)	20.33 (3.84)	30.28 (3.08)	39.02 (8.12)	17.79 (3.61)
E-β-Thalassemia	3.70 (1.02)	23.83 (6.94)	64.14 (10.92)	19.14 (3.14)	29.60 (2.60)	50.54 (18.28)	28.32 (6.33)
E-β-Thalassemia trait	4.17 (2.40)	28.83 (13.43)	73.67 (19.06)	20.67 (3.93)	28.50 (3.14)	48.20 (16.67)	22.17 (7.65)
Hb E disease	5.38 (0.92)	31.26	59.71 (7.16)	18.56 (2.25)	31.03 (1.24)	35.00 (7.92)	19.76 (3.49)
Hb E trait	4.94 (0.86)	35.53 (6.01)	72.67 (8.66)	23.49 (6.28)	30.96 (1.86)	43.36 (30.90)	17.56 (12.45)
Hb Bart	4.00	30.00	82.00	26.00	32.00	40.00	13.00
Hb D	3.00	31.00	98.00	28.00	30.00	48.00	13.00
Sickle cell disease	4.25 (1.50)	30.25 (8.18)	75.25 (12.89)	23.75 (4.03)	32.00 (1.82)	47.50 (20.74)	17.50 (4.35)
Sickle cell trait	4.00	26.00	60.00	14.00	23.00	53.00	27.00

DISCUSSION

The prevalence of hemoglobinopathies among them was almost 30%.This finding corroborates with a study conducted among anemic patients in a hospital of Dhaka city which reported that 57.8% anemic patients had hemoglobinopathies(5). Another study has indicated that about 28% of assessed rural women of Bangladesh were sufferers or carriers of beta thalassemia or hemoglobin E disorders(7). Similar finding was reported by a population based study which reported that 11.89% of the adult population had β-globin gene mutations(8). An outpatient based study from neighboring India reported that 22% of the anemic children had some sort of hemoglobinopathies(9).

Hb E Trait was the most prevalent hemoglobinopathy (12%) followed by E-β-thalassemia (7.3%), β-thalassemia minor (6.6%) and Hb E disease (2.6%). Other hemoglobinopathies like α and β-thalassemia major, sickle cell disease etc. were quite rare among our included patients. A study conductedamong the anemic patients reported that the most common form of hemoglobin disorder was β-thalassemia minor (21.3%) along with E-β-Thalassemia and hemoglobin E trait. Other forms of hemoglobin disorders are hemoglobin E disease, hemoglobin D/S trait, β-thalassemia major, and δ-β-thalassemia (5).In West Bengal, the neighboring state of India, E- -Thalassemia, hemoglobin E trait and -Thalassemia were most prevalent hemoglobinopathies(9).

Patients with E-β-Thalassemia and β-Thalassemia major of our study were mostly suffering from severe form of anemia while patients with hemoglobin E trait and β-Thalassemia minor were mostly suffering from mild anemia. As E-β-Thalassemia and β-Thalassemia major are homozygotic disorders of β-chain of hemoglobin, production of hemoglobin is extremely low, resulting in severe anemia. On the other hand, the patients suffering from hemoglobin E trait and β-Thalassemia minor inherit one gene of β-thalassemia, they are manifested as either asymptomatic or mild to moderate anemia. Similar pattern of anemia was reported among thalassemia patients of Bangladesh in different studies (4,10,11).

Our study has several limitations. The study was a facility based study that included only the anemic patients visiting the study center, mostly for treatment of anemia. As a result, the anemia status and prevalence of hemoglobinopathies do not represent the community picture. Moreover, detailed socio-demographic, clinical and laboratory parameter data of the patients was not available.

CONCLUSION

The present study provides a bird's eye view about the prevalence and pattern of thalassemia and hemoglobinopathies among anemic patients of northern Bangladesh. Almost one third of the anemic patients were suffering from at least one type of hemoglobin disorder. Hb E Trait, E-β-thalassemia, β-thalassemia minor, and Hb E disease were the most prevalent

hemoglobinopathies.Further community based studies including detailed socio-demographic and clinical factors is suggested for the better understanding of the epidemiology of hemoglobinopathies in the respective region.

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Major depression is generally diagnosed in people with a persistent and unreactive low mood and loss of all interest and pleasure accompanied by a range of symptoms including appetite loss, insomnia, fatigue, loss of energy, poor concentration, psychomotor symptoms, inappropriate guilt and morbid thoughts of death.[1]

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Low Level of Maternal Serum Magnesium Level is one of the Predictor of Preterm Labour

Dr. Priyata Dutta [1], Prof. Sakti Das [2], Dr. Shahina Akhter [3], Dr. Sabina Shameen [4], Dr. Rebeaka Tarannum [5]

Author

01. Dr. Priyata Dutta
Former Intern Doctor, MMC USMLE Student, USA.
Email: priyatadutta576@gmail.com
02. Prof. Saktas
Obstetrics & Gynaecology SSMC Mitford Hospital
Email:saktidas 1978@gmail.com
03. Dr. Shahina Akhter
Asst. Prof. Obstetrics & Gynaecology SSMC Mitford Hospital
Email : mostafil100911@yahoo.com
04. Dr. Sabina Sharmeen
Asst. Prof. Obstetrics &Gynaecology SSMC Mitford Hospital
Email :sabinasharmeen1304@gmail.com
05. Dr. Rebecca Tarannum
Junior Consultant Obstetrics &Gynaecology SSMC Mitford Hospital
Email :rebeaktarannum@gmail.com

Correspondence

Dr. Priyata Dutta
Former Intern Doctor,
MMCH
USMLE Student, USA.
Email:privatadutta576@email.com

ABSTRACT

INTRODUCTION

Preterm birth is a major cause of neonatal mortality with the highest rates of health care costs due to hospitalization of woman with a preterm labour and the expenses of long term care of preterm neonates1 Alongside, preterm birth In causes long-term sequels both for the mother and in the baby. Premature infants are at a greater risk of short and long term complications including disabilities and impediments in growth and mental development2. Over the past two decades a la marked increase in the survival of very low birth weight infants has been seem. However, a reduction in mortality has not been accompanied by a reduction neonatal morbidity or long term handicaps3.

During the recent years, consideration into the related causes and early prediction of preterm labour has increased significantly. Some related factors and predictive index of preterm labour are included: Fibronectin4, risk scoring system, length, dilation and score of cervix5, ß-hCG6, salivary estriol7 and clinical findings8. The predictors may be used in the management of women at high risk for preterm labour, such as women with previous preterm labour and also can be used as a part of management protocol to individualize patient care9.

In line with different suggested etiologies a change in cellular basic biochemical function caused by a of change in micro and macro-minerals is also proposed10. Although these trace elements do not play any direct role in the etiology of preterm a labour, they may have an indirect role in the etiopathogenesis of preterm labour11. However, a number of previous studies

found a correlation between level of maternal serum magnesium reduction and preterm labour. Some other studies found no relationship between the two variables8.

Preterm labour followed by preterm delivery and birth is a major health issue in Bangladesh. It is the leading cause of perinatal mortality and morbidity not only in Bangladesh but also across the globe and is responsible for one-third of infant deaths worldwide12. Majority of preterm births is as result of preterm labor. Preterm labour is defined as the onset of labour prior to completion of 37 weeks of Gestation, in a pregnancy beyond 20 weeks of gestation13. The world health organization (WHO) defines preterm labour as one where the labour starts before the 37th completed week (>259 days) of gestation, counting from the first day of the last menstrual period14. Preterm labour accounts for 10-15% of all pregnancies and is commonly recognized by frequent uterine contractions leading to progressive cervical changes15.

ROLE OF SERUM MAGNESIUM

Besides various etiologies, preterm labour may be due to biochemical alteration of body functions at cellular level stating emphasis on trace elements, of which magnesium (Mg); the second most abundant intracellular cation after potassium, is a subject of interest now-a-days. Serum level of magnesium ranges from 1.5 to 2.1 meq/l9. It is known that serum magnesium level falls with advancing gestational age and this

decrease of Mg plays an important role in the physiology of parturition10. Pregnancy is marked by a state of hypomagnesaemia is observed in preterm labour cases9,10. Hypomagnesaemia in pregnancy results in concomitant decrease in

myometrial magnesium level and this decrease might play a potential role in initiating preterm labour11.

ROLE OF MAGNESIUM IN PRETERM LABOUR

Preterm labour may be due to an alteration in basic biochemical functions of the body at cellular level stating emphasis to trace elements. Among the trace elements, magnesium has received the highest to attention. Magnesium is the second most bivalent cation after potassium found intracellular signifying its importance in the multitudes of physiological cellular function. It plays a number of vital physiological and biochemical roles10.

Magnesium acts as a co-factor in more than 300 cellular enzyme reaction. It activates those enzyme and plays an important role in the mechanism of nerve conduction, uterine contractility and contractile response of other smooth muscles. Magnesium anatomizes the action of on uterine myometrium causing it to relax by stimulating o2 adrenergic receptor and cyclic AMP. It competes with calcium, iron which brings about inhibition of myosin kinase and therefore s drop in phosphorylated myosin20.

Magnesium is a required co-factor in the myometrial contractile response and low extracellular magnesium level may result in increased contractility. Sjogren and Edvinsson (1988) demonstrated that extracellular magnesium influences the release of calcium from intracellular depot. A decrease in extracellular magnesium resulted in an increase in the total exchangeable and intracellular calcium fraction with a result increased smooth muscle tension21. Since magnesium has an inhibitory role on myometrium contractions, attention has been paid to the role of magnesium deficiency in causing preterm labour. The inhibitory effect of magnesium on preterm labour contractions is attributed to antagonism of calcium-mediated uterine myometrial contractions33.

Decreased serum magnesium level could probably decrease the magnesium level in myometrium which could lead to neuromuscular hyperexcitability resulting in muscle cramps and uterine musculature hyperactivity34,35. This hyperexcitability of uterine musculature leads to increased cervical dilatation which in turn facilitates approach of vaginal micro-organisims into cervical canal and changes quality and quantity of vaginal discharge while uterine passage colonized by pathogenic microorganisms36.

Another possible way by which hypomagnesaemia induces uterine irritability is inhibition ofadenyl cyclase with resultant increase in cytoplasmic calcium level. Thus hypomagnesaemia in plasma during pregnancy results in concomitant decrease of same in myometrium and a low magnesium concentration in pregnant human myometrium lead to initiation of uterine contractions and preterm labour.

Rising serum magnesium level serves to relax the uterine smooth, thereby b providing the basis for the use of magnesium sulfate as a tocolytic agent. Magnesium sulfate (MgSO4) is currently the most commonly used tocolytic agent in the United States15. Some recent studies have recommended prophylactic oral magnesium supplementation as an inexpensive way of decreasing risk of preterm labour among all pregnant women or particularly those at higher risk7,34. Although the inhibitory mechanism of magnesium sulfate on uterine contractility seems obvious, there are differences in individual metabolism of different materials.

CONCLUSION

Based on the findings the current study concludes that low level of serum magnesium in pregnancy is significantly associated with preterm labour and thus estimation of serum magnesium levels can be used as a useful predicting tool for preterm labour especially in countries with poor resources since it is a cheap investigation. It seems serum magnesium evaluation must be carried out in pregnant women in order magnesium supplementation may be considered in patients with decreased serum magnesium levels for prevention of preterm labor.

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Adolescent Pregnancy - A Global Problem

Prof. Sakti Das [1], Dr. Priyata Dutta [2], Dr. Shahina Akhter [3], Dr. Sabina Shameen [4], Dr. Rebeaka Tarannum [5]

Author

01. Prof. Sakti Das
Obstetrics & Gynaecology SSMC Mitford Hospital
Email:saktidas 1978@gmail.com
02. Dr. Priyata Dutta
Former Intern Doctor, MMC USMLE Student, USA.
Email: priyatadutta576@gmail.com
03. Dr. Shahina Akhter
Asst. Prof. Obstetrics & Gynaecology SSMC Mitford Hospital
Email : mostafil100911@yahoo.com
04. Dr. Sabina Sharmeen
Asst. Prof. Obstetrics &Gynaecology SSMC Mitford Hospital
Email :sabinasharmeen1304@gmail.com
05. Dr. Rebecca Tarannum
Junior Consultant Obstetrics &Gynaecology SSMC Mitford Hospital
Email :rebeaktarannum@gmail.com

Correspondence

Prof. Sakti Das
Obstetrics & Gynaecology
SSMC Mitford Hospital
Email :saktidas1978@gmail.com

INTRODUCTION

Adolescent are defined by the World Health Organization (WHO) is the period of life between 10 to 19 years1, Adolescent (Latin: adolescence to grow) is period of life during the carefree adolescent accompanied by its profound change in growth rate, body competition and marked physiologic and endocrine changes, in a time of life when individual is at particular health risk2. Lack of access to education, nutrition and other reeds adversity affect physical, mental social and psychological growth of around 16 million female adolescents3.

There are 1.2 billion adolescents worldwide today, that is one in every five people on the planet in aged between 10 and 19 years 1.7 million of them die due to violence suicide, accidents and illness. Five in every minute get HIV and 70,00 adolescent mother die due to pregnancy related complications4. Short maternal height has been found to account for a sizable number of low birth weight babies, who are subsequently more susceptible to infection and death infancy4.

International Conference on population and Development (ICPD) eld in Cairo in 1994 upheld the reproductive needs and rights of women as central to the ways of addressing population and development4.

Poverty is a major reason that encourage child marriage. If one looks at the trend, they would notice that child marriage is more prevalent in underdeveloped or developing countries Financial constraints or and shortage of food often lead parents to marry off their girls at an early age. Moreover, younger girls, who are considered more attractive and have a higher reproductive lifespan, require comparatively less dowry.

According to a 2015 human rights watch report, research shows that globally age 10-14 are five times more likely to die during delivery than women aged 20-24.

Often these child brides are sold off by their husbands to dalals or traffickers, who in turn sell these girls to brothels. The Telegraph and Foreign Policy have printed in-depth stories that shed light on the complexity of this problem.

According to the Foreign Policy report, in Bangladesh, a "country with the highest rate of marriage involving girls under the age of 15 the world and where 150,000 to 200, 000 children and young women have been trafficked into prostitution, the two forms of abuse ".

The government has taken many commendable steps to address the problem of child marriage the country, in line with target 5.3 of the Sustainable Development Goals, has committed to eliminate child, early and forced marriage by 2030. It ratified the convention on the Rights of the Child in 1990 which sets the minimum age of marriage at 18: enacted the Dowry Prohibition Act, and inked many polices that discourage and criminalize child marriage [source: The daily Star, 26 Nov, 19].

Teenage pregnancy, which is detrimental to the health of mother and child, is a common public health problem worldwide. It is a problem that affects nearly every society developed and developing alike. It is one of the key issues concerning reproductive health of women not only in developing but also in developed countries.

This is a period of transition from childhood to adulthood. Adolescence is a distinct and important biological and social

stage of development. Pregnancy in a girl aged between 10-19 years is adolescent or teenage pregnancy. Adolescent pregnancy continues to be a complex and challenging issue for families, health workers, educators, important factors for the rapid population growth in the world is adolescent.

The adolescent period covers the age of 10-19 years This is a period of transition from childhood to adulthood. Adolescence is a distinct and important biological and social stage of development. Pregnancy in a girl aged between 10-19 years is adolescent or teenage pregnancy. Adolescent pregnancy continues to be a complex and challenging issue for families, health workers, educators, societies and governments, and adolescents themselves. One of the important factors for the rapid population growth in the world is adolescent childbearing.

GLOBAL SITUATION

An estimated 21 million girls aged 15 to 19 years and 2 million girls aged under 15 years become pregnant in developing regions. Approximately 16 million girls aged 15 to 19 years and 2.5 million girls under age 16 years give birth in developing regions9

The global adolescent birth rate has declined from 65 births per 1000 women in 1990 to 47 births per 1000 women in 201510. Despite this overall progress, because the global population of adolescents continues to grow, projections indicate the number of adolescent pregnancies will increase globally by 2030, with the greatest proportional increases in West and Central Africa and Eastern and Southern Africa"11.

Additionally, regional differences reveal unequal progress: adolescent birth rates range from a high of 115 births per 1000 women in West Africa to 64 births per 1000 women in Latin America and the Caribbean to 45 births per 1000 women in South-Eastern Asia, to a low of 7 births per 1000 women in Stem Asia12. There are also up to three times more adolescent pregnancies in rural and indigenous populations than in urban populations 13.

Adolescent pregnancies are a global problem that occurs in high, middle, and low income countries. Around the world, adolescent pregnancies are more likely to OCCU in marginalized communities, commonly driven by poverty and lack of education and employment opportunities8.

In Latin America and the Caribbean between a quarter and half of adolescent mothers said that their babies were unplanned, while in India, Indonesia and Pakistan only 10% to 16% were unplanned. In the United States almost three-quarters of pregnant 15-19 year olds said were unplanned. that their pregnancies Married adolescents also have unplanned babies. In Ghana and Peru more than half of married adolescents, and in Botswana, Kenya, Malawi, Zimbabwe and Colombia more than a third reported unplanned or unwanted babies is in many countries 30%-60% of adolescent pregnancies end in abortion16. This figure is disproportionate considering that adolescent pregnancies make up just over 10% of pregnancies worldwide.

Abortions Of 19 million illegal abortions each year, 2.2 to 4 million are on adolescents17.

WHO is committed to reaching the Sustainable Development Goals targets 3.1 and 3.7 associated with adolescent pregnancy and maternal mortality, WHO is also invested in the United Nations Secretary General's *Global Strategy for Women's Children's and Adolescents Health*19, and is working in collaboration with partners to fulfil its objectives.

More than 14 million adolescent girls give birth each year. Although these births occur in all societies, 12.8 million, more than 90%, are in developing countries.

The highest levels of adolescent pregnancy are in Africa. There are also high rates in India, Bangladesh, Latin America and the Caribbean. More than half of women in Sub-Saharan Africa and about one third in Latin America and the Caribbean give birth before the age of 20.2 even within developed countries there is wide variation. The 15-19 year old birth rate in the USA, Ukraine, Georgia and Republic of Moldova is 14 times higher than in Japan, and twice as high as in Australia and Canada.

Early births around the world Fewer than 10% of girls have a baby before the age of 18 in (lowest first); Japan, Germany, Poland, France, China, Tunisia, Sri Lanka, Great Britain, Morocco, Burundi, Philippines, Rwanda, United States of America, Thailand 10-20% of girls have a baby before the age of 18 i Turkey. Peru, Trinidad Tobago, Egypt. Indonesia, Paraguay, Brazil, Ecuador, Sudan, Pakistan, Dominican Republic, Colombia, Namibia, Bolivia, Zambia, Mexico 20%-30% of girls have a baby before the age of 18 in Zimbabwe, Ghana, Botswana, Yemen, Kenya, Guatemala India, United Republic of Tanzania, Togo 30: 40% of girls have a baby before the age of 18 in Madagascar, Burkina Faso, Senegal, Nigeria, Malawi. Central African Republic, Uganda 40% 50% of girls have a baby before the age of 18 in Côte D'Ivoire, Liberia, Mali, Cameroon Bangladesh More than 50% of girls have a baby by the age of 18 in Niger.

**** Sources: Alan Guttmacher Institute. 1998. Into a New World: Young Women's Sexual and Reproductive Lives. UNICEF, 2001. Innocenti Report Card Table of Teenage Births on Rich Nations Innocenti Research Centre, Florence

More than half of girls are married by the age of 18 in Bangladesh, Burkina Faso, Chad, Mozambique and Nepal, with more than 40% married in Ethiopia, India, Malawi, Nigeria and the Yemen. Very early childbirth below the age of 16 is also associated with child marriage. In Bangladesh, Cameroon, Liberia, Malawi, Mali, Niger and Nigeria, all countries where early

marriage is common, 8-15% of girls have had a child by the age of 15.2 In Bahrain 18-20% of adolescents begin childbearing under the age of 16.3 In Kuwait 40% of mothers giving birth in 16- years-old.

Adolescent girls in rural areas are much more likely to start childbearing during adolescence than those living in urban areas - 24% compared to 16% in developing countries generally. Having a child outside marriage is relatively common in many countries where child marriage is uncommon. Latin America, the Caribbean, parts of sub Saharan Africa and developed countries have higher rates of adolescent pregnancy outside marriage compared with Asta, North Africa and the Middle East. In Nigeria, where early marriage is common fewer than 10% of adolescent Girls give birth outside marriage. In Kenya where early marriage is less common, more than half of unmarried girls give birth before the age of 20. Early marriage is seen by parents as protecting a girl but the chosen husband is often a much older, sexually experienced man. and early marriage may put a girl at risk of STIS and HIV as well as too early pregnancy. Very early marriage and childbirth mark premature transition to adulthood for girls, and usually bring an end to education and to prospects of training for employment.

In the US more than 40 percent of women become pregnant before they reach 20 years of aged0 The US has the highest adolescent birth rate of all developed countries, despite sexual activity rates that are similar or higher among Western European teenagers than rates observed for teenagers in United the States. The reasons for this contrast are unclear, but European teenagers may have greater access contraception. To and acceptance of

US teenagers have one of the highest pregnancy rates in the Western world-twice as high as the rates found in England, France and Canada, three times as high as that in Sweden; and seven times as high as the Dutch rate, despite similar or higher rates of sexual activity in the other countries 20. Approximately one fourth of youths in the US report first intercourse by 15 years of age22

CAUSES AND RISK FACTORS

Although it is not inevitable, some life circumstances place girls at higher risk of becoming teen mothers. Poverty is correlated significantly with adolescent pregnancy.

Growing up in a single parent household. having a mother who was an allotment mother, or having a sister who has become pregnant are critical life events for becoming teen mother. In developing countries, early to at marriage is the main reason for early pregnancy. These countries by low age at marriage, poverty, low value and self-esteem of girls, low level of education and low level of contraceptive use early childbearing, sexual abuse and assault.

There are several predictors of sexual intercourse during the early adolescent years, including early pubertal development, a history of sexual abuse, poverty, the lack of attentive and nurturing parents, cultural and family patterns of early sexual experience, a lack of school or career goals, and poor school performance or dropping out of school sexual abuse or Educational failure, poverty, unemployment and low self-esteem are understood to be negative outcomes of early childbearing. These circumstances also contribute to the likelihood of teen pregnancy. Potential risk factors for a teenage girl to have early sexual behavior and or become pregnant include: early dating and risky sexual behaviors (e.g., multiple partners, poor contraceptive use); early use of alcohol and/or other substance use; dropping out of school and/ or low academic achievement; lack of supportive environment; lack of involvement in school, family, or community activities and /or poor quality family relationships; perceiving little or no opportunities for success and/ or negative outlook on the future; living in a community where early childbearing is common and viewed as the norm rather than as a cause for concern; growing up under impoverished conditions and poverty; having been a victim of non-voluntary sexual experiences; or having a mother who was aged 19 or younger when she first gave birth.

CONSEQUENCES

1. Health Consequences

Adolescent mothers (ages 10 to 19 years) face higher risks of eclampsia, puerperal endometritis, and systemic infections than women aged 20 to 24 years Additionally. some 39 million unsafe abortions among girls aged 15 to 19 years occur each year, contributing to maternal mortality and lasting health problems.

Early childbearing can increase risks for newborns, as well as young mothers. In low and middle-income countries, babies born to mothers under 20 years of age face higher risks of low birthweight, preterm delivery, and severe neonatal conditions Newborns born to adolescent mothers are also a greater risk of having low birth weight, with long-term potential effects. In some settings, rapid repeat pregnancy is a concern for young mothers, which presents further risks for both the mother and child 24

a. Hypertensive disease in pregnancy

A WHO review concluded that there probably is no special risk to adolescent mothers of hypertension associated with their young age25 However, hypertension is the most common complication of pregnancy amongst women having their first child and is therefore a common complication for many adolescent mothers,

b. Anaemia

Approximately half of adolescent girls in the developing world are anaemic. Severe anaemia is an important indirect cause of maternal mortality. Nutritional deficiencies in folic acid or iron, and infectious diseases, such as malaria and intestinal parasites all contribute to adolescent anaemia. Iron deficiency, anemia adolescent mothers are more likely to give birth preterm to low birth-weight babies.

c. Prolonged labour, obstructed labour and fistulae

Prolonged obstructed labour, usually the result of a small pelvis, or an awkwardly positioned baby, is more common in first time mothers, smaller women and girls below the age of 16 whose pelvis is immature, Obstetric fistula affects 50 000 to 100 000 women a year.6 WHO estimates that 2 million women are living with unrepaired obstetric fistulae. If a fistula is not promptly repaired, the disability can ruin a woman's life. Many are declared 'unclean and deserted by husbands or families. Studies in Africa have shown that 58-80% of women with obstetric fistulae are under the age of 20, with the youngest aged only 12 or 13 years. At Addis Ababa Fistula Hospital the average age of fistulae patients was 17.8 years, and the average period of labour was 3.8 days.

d.Puerperal sepsis

Puerperal sepsis is one of the main causes of maternal mortality among adolescents. The risk of puerperal sepsis or postpartum infection increased in cases of long or obstructed labour.

2. Economic and social consequences

Unmarried pregnant adolescents may face stigma or rejection by parents and peers and threats of violence. An estimated 5% to 33% of girls ages 15 to 24 years who drop out of school in some countries do so because of early pregnancy or marriage 32.

PREVENTION

Adolescent pregnancy has been a target for prevention 3, in many countries such as the United States 34, and Japan 35, as well as low and middle income countries 36, One main reason for this large interest is that adolescent pregnancy, with its many associated social problems such a single parenthood, welfare dependency.

maternal low educational attainment, and maternal disability pension, has been known tn increase risk of subsequent child abuse, neglect, suicide and double suicide" Furthermore, studies show that offspring of adolescent pregnancies are more likely to become teenage parents as well, thus causing a generational chain of people with social and economic risk.

Parents. guardians and other members of society must play key roles in encouraging young adults to avoid early pregnancy and to stay in school. The primary messages of prevention programs should be on abstinence and personal responsibility. Adolescents must be given clear pathways to college or jobs that give them hope and a reason to stay in school and avoid pregnancy. Public and private sector partners including parents, schools, business houses media, health care providers, and religious institutions must work together to develop comprehensive strategies for prevention of teen pregnancy.

A successful prevention program will include the following strategies *(Modified from American academy of pediatrics, Committee on Adolescence.)*

1. Adolescents should be encouraged to postpone early sexual activity. Abstinence counseling and information on and access to pregnancy prevention/ termination, if they become sexually active, are an important.

2. Physicians should be sensitive to issues relating to adolescent sexuality and be prepared to obtain a developmentally appropriate sexual history on all adolescent patients.

3. It should be ensured that all adolescents who are sexually active lave knowledge of and access to contraception.

4. Physicians should encourage and participate in community efforts to prevent first and subsequent adolescent pregnancies. These efforts should be directed to the specific needs of youth in that community

5. Physicians should advocate for comprehensive medical and psychosocial support for all pregnant adolescents

Early and adequate prenatal care should be tailored to the medical, social,

nutritional, and educational needs of the adolescents and should include child care training as well.

6. Adolescent mothers should not receive early postpartum discharge so that clinicians can ensure that the mother is capable of caring for her child thus ensuring optimal health care and has resources available for assistance and appropriate support.

7. The adolescent mother's partner and father of her child should be included in teenage pregnancy and parenting programs with access to education and vocational training, parenting skills classes, and contraceptive education.

CONCLUSION

The global problem of adolescent pregnancy is common and has become a key public health concern for all. In order to reduce the rate of early child bearing, adolescents, their parents and community should be made more aware of the negative health, social and economic consequences of it. Such awareness could be created through social mobilization, information dissemination, sex education and communication campaigns. Each and every aspects of teenage pregnancy should ideally be

dealt with carefully and sensibly to reduce the occurrence, complications and societal burden of this

National policies, advocacy, education programmes and laws set a framework to protect young people against too early sex, sexually transmitted infections or unwanted pregnancies. National laws govern the extent to which pregnant adolescents can continue with education, make choices about adoption or termination, and consent to medical treatment. National initiatives can reduce stigma, encourage adolescent mothers to enhance their prospects and choices, and fathers to remain involved with a baby's upbringing. National or regional policies define adolescent entitlement to antenatal care, care in childbirth and postnatal care

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Mal-development of Genital Tract Various Presentation and Treatment

*Mah Zabin-Naz**

ABSTRACT

Congenital malformations of the female genital tract are defined as deviations from normal anatomy resulting from embryological maldevelopment of the mullerian or paramesonephric ducts.

It's prevalence of 4-7% of all women, but has been noted in up to 25% of women who have had miscarriages and/ or deliveries of premature babies. (1, 2)

The causes are either genetic or environmental. In many cases it is associated with renal abnormality (40%) and skeletal malformation (12%).

In this report, I am going to present a case where a young lady presented with mullerian anomalies with associated renal problem.

Dr Mah Zabin-Naz
Associate Professor
Obstetrics & Gynaecology
East West Medical College & Hospital
Turag, Dhaka

Keywords: Uterine anomalies, kidney, mullerian duct

INTRODUCTION

A 14 yrs old unmarried young girl came to Dhaka Medical Collage Hospital (DMCH) from Maizdee, Noakhali. Her menarchi was at 13 yrs of age and she was regularly menstruating. After 6 months of menstruation she developed fever and lower abdominal pain during menstruation which was gradually increasing. She went to General hospital Noakhali with this complaint. Her USG done there which is revealed uterus didelphys with right sided haematocolpus and haematometra with absence of Right kidney. Examination under anaesthesia was done there and shows two cervical opening. By left cervical opening regular menstruation occur but right cervical opening is blocked. Dilatation is not possible and patient referred to DMCH.

CASE REPORT

This young lady underwent laparotomy at DMCH. After opening abdomen by pfannestiel incision shows there was adhesion with omentum, peritonium, fallopian tubes and ovary. After removal of adhesion two cornue of uterus was visualized. A fluctuating mass contineous with the Right cornue. A dilator was introduced through the cervix which communicate with left cornue but not with Right Cornue. An incision was given at the lower part of right cornue of uterus. Frank pus coming cut but no communication was found with cervix or vagina. An incision was made on the medical wall of right cornue and make communication with left cornue. A folly's catheter was introduced through the cervix and kept into Right horn and inflated for drainage. Uterine wall was closed. Abdomen closed in layers. Catheter was removed after 2 days.

DISCUSSION

Mullerian Anomalies (MAs) are classified by the American Society for Reproductive Medicine (ASRM). Diagnosis of a MA may be incidental or during evaluation for a menustrial or pain related complaints (3, 4). Ultrasound is helpful for diagnosis and MRI is more precise.

This patient diagnosed as class III abnormality i.e uterine didelphys. It has fully developed two uterine horns along with two fully developed unfused cervix (5).

CONCLUSION

Understanding the embryologic origin of the defect of mullerian anomalies is the key to its correct diagnosis. Every congenital anomalous patient present with different presentation and individualization of treatment needed.

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Carotid body tumour, a rare neck mass that mimicking cervical lymphadenopathy

Md. Abdur Rahman [1], Masuk Mahmud [2], Mohammad Harun-Or-Rashid [3], Mahmudul Hasan [4], Rashed Mongur [5], Naimul Hossain [6],

ABSTRACT

Introduction: Carotid body tumours are the most common Head Neck Paraganglioma, accounting for 60%. Sporadic is common, but familial cases may occur with autosomal dominant inheritance. 2–4% of carotid body tumours are malignant.

Case report: We reported a 21 years old lady of right sided carotid body tumour. Searching whole body, no other paragangliomas are found. No family history of such diseases in any other siblings. Lady was diagnosed previously as cervical lymphadenopathy.

Conclusion: Carotid body tumour is a rare neck mass. Often it is misdiagnosed as cervical lymphadenopathy. So careful & thorough examination should be done if suspicion arises.

Keywords: Paraganglioma (PG), HNP (Head neck paraganglioma), CBP (Carotid body paraganlioma), CBT (Carotid body tumour), Pheochromocytoma (PCC).

INTRODUCTION

Paragangliomas are benign tumours arise from paraganglionic chemoreceptor cells of neural crest origin. It is also locally invasive in nature. In the head and neck these most commonly arise from the carotid body (carotid body tumours), jugulotympanic region (glomus tympanicum), jugular bulb (glomus jugulare) and vagus nerve (glomus vagale). Pheochromocytoma (PCC) is also a paraganglioma.1

Most of the cases of paragangliomas (PG) occur sporadically though familial cases occur with autosomal dominant inheritance. In 10% cases this tumours are multifocal in origin and in about 5% cases it secrets catecholamines.1

The carotid body tumour (CBT) occurs at the bifurcation of the common carotid artery. With increase in size, it may cause splaying of the internal and external carotid arteries which is characteristic for carotid body tumour. It may encase the carotid vessels with increase in size but does not narrow their calibre.2

Alberto Dias da Silva et al in their case report they found a 46 year old male who was undergone an attempted lymph node biopsy before referral. The mass at the time of biopsy was noted to be

confluent to the carotid artery, and the procedure was aborted.3

So, it is very much important and all doctors should keep in mind that it can be mistaken as an abnormal lymph node in the upper cervical chain because of its site.2

CAROTID BODY

The carotid body was first described by Von Haller in 1743. It is a chemoreceptor which is a small ovoid shaped structure located within the adventitia at the posterior aspect of the carotid bifurcation. The carotid body senses blood flow and pH change, and regulates ventilation to attain a constant state. This is actuated via Hering's nerve, which originates from the glossopharyngeal nerve, with a small contribution from the vagus nerve.4

GENETICS OF FAMILIAL PARAGANGLIOMAS

Familial paraganglioma is inherited in an autosomal dominant manner with maternal imprinting. Therefore, when an individual inherits the paraganglioma (PG) gene from the mother (regardless of whether she herself is affected), that child is unaffected and becomes a silent carrier of the mutated gene. On the other hand, when a child inherits the paraganglioma (PG) gene from the father, the offspring will have paragangliomas regardless of the affected status of the father. Subsequently, the affected/unaffected child harbouring the abnormal paraganglioma (PG) gene will be able to pass the gene to his/her children; he/she will have affected children only if the transmitting parent is a father. This unusual form of incomplete genetic penetrance is caused by sex-specific gene modification during gametogenesis.1

CASE REPORT

A 21 years old female was admitted with a right sided neck swelling (Figure:1) in this hospital. She was provisionally

diagnosed as cervical lymphadenopathy. She gave a history of this swelling for one year which was painless but gradually increasing in size. The lady had 5 brothers & 1 sister, none had such disease. Ultrasongram of neck reported a few enlarged lymph nodes were present on both sides of neck at the level II, the largest one measuring about 4.41x 3.07 cm on right side. Cytopathology suggested chronic non-specific lymphadenitis. After admission, the neck swelling was found at below the angle of lower jaw in middle part of the neck on right side. It was an oval shaped swelling, mobile horizontally but restricted vertically, firm in consistency, non-tender. A transmitted pulse was felt over it. On auscultation, a bruit was audible. Some multiple small swellings were present in other parts of neck, level II on both sides. Ear nose oral cavity revealed no abnormality. On fibreoptic endoscopy nose, nasopharynx, oropharynx larynx hypopharynx appeared normal. Cytopathological study repeated and was found chemodectoma.

Figure1: 21 years old lady.

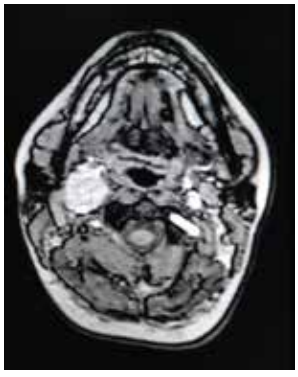

Figure2: MRI Axial section.

Figure3: Splaying of ICA & ECA.

MRI of neck was done which suggested a soft tissue mass in right side of neck (Figure:2) arising from carotid bifurcation causing splaying of Internal carotid artery (ICA) & External carotid artery (ECA) (Figure:3) with multiple cervical lymphadenopathy in both submandibular parajugular locations. Duplex study revealed normal findings in carotid & vertebral arteries on both side with right sided carotid body tumour. CT angiogram of both carotid arteries suggested carotid body tumour at bifurcation of right common carotid artery causing splaying of external and internal carotid artery without obvious encasement of adjacent vessels. In urine, though UTV level was high but VMA found within normal limit. Serum parathormone level was found within normal limit. Ultrasonogram of whole abdomen revealed no abnormality. After confirmation of diagnosis and assessment of other site, patient was referred to the Specialized CardioVascular disease hospital, National Institute of Cardivascular Diseases where she received surgical treatment. It was operated successfully with sacrificing the right External carotid artery. There was right lingual nerve palsy in post-operative follow up.

DISCUSSION

Carotid body paragangliomas are the most common head neck paragangliomas which account for 60%. Parient with it, additional head neck paragangliomas must be searched carefully. Occurs bilaterally in up to 17% of patients. 18% of carotid body tumours are familial.4

Alberto Dias da Silva et al stated that since 1891, approximately 152 of 1425 Carotid Body Tumours described in the literature were malignant.3

Familial paragangliomas may be multiple and may very rarely show malignant transformation.2

Han et al in their case report found a case of a patient with bilateral carotid fibromuscular dysplasia (FMD) and familial carotid body tumour, including one in an identical twin, probably the first case of concomitant carotid body tumour and Fibromuscular dysplasia (FMD) in the world literature. Fibromuscular dysplasia (FMD) is a disease of the medium-sized arteries that leads to narrowing of the arterial lumen, typically affecting women under the age of 50.5

Carotid body tumour has a slight predilection for females. The average age of presentation is mid-forties. Approximately 2–4% of carotid body tumours are malignant. Carotid body tumours typically present as a painless, slow growing neck mass just inferior to the angle of the mandible and deep to the sternocleidomastoid muscle.4

Shamblin WR et al in their study compared the clinicopathologic findings in ninety cases of carotid body tumors seen at the Mayo Clinic from 1931 through 1966 with those in 500 reported cases in the literature. They found 62 men and 28 women.6

Davidovic et al found 12 patients in their study, 9 female and rest 3 were male. They also found 8 of these cases presented as a large asymptomatic non-tender neck mass, and two each presented with dysphagia, and hoarseness of voice.7

Carotid body paragangliomas present with cranial neuropathies in about 11% of cases, most commonly the vagus nerve. The recurrent laryngeal nerve is involved in about 8%, the hypoglossal nerve in abuut 6%, and the sympathetic chain in about 2% of cases. Cranial nerve deficits are more common in patients with masses > 5 cm in size.4

Carotid body paragangliomas are typically mobile in the horizontal plane, but more restricted in the vertical, a finding known as Fontaine's sign. Examination may rarely demonstrate a pulsatile bruit or thrill, suggesting arterial compression. Carotid body tumours may also present with oropharyngeal fullness due to its extension into the parapharyngeal space.4

On Ultrasonogram paragangliomas do not appear particularly vascular despite showing avid enhancement on contrast-enhanced CT and MRI. They may show a characteristic 'salt and pepper' appearance on MRI with the 'pepper' or low-signal appearance representing flow voids of feeding vessels.2

CT and MRI has a role in the diagnosis of head neck paragangliomas. The former (performed with high resolution parameters) will best demonstrate bony involvement and MRI will best demonstrate the soft tissue character of tumours.1

Ma, et al. concluded in their study that digital subtraction angiography (DSA) is the gold standard for diagnosis of carotid body tumour, as they confirmed their all 18 cases by it.8 Hua et al also supported that DSA is considered to be an important technique for the diagnosis of carotid body tumour as it can define the profile of the tumor, including location, size and the presence of intratumoral blood vessels.9

Selective carotid angiography shows carotid body paraganglioma. The typical separation of external and internal carotid arteries is present known as "lyre sign".7

Shamblin WR et al suggested in their study a classification of carotid body tumour which was appreciated and accepted by others for future surgical cases. Group 1 tumors are relatively small and minimally attached to the carotid vessels. Surgical excision usually can be carried out without difficulty. Group 2 tumors are usually larger and show moderate arterial attachment. These tumors are amenable to careful surgical removal. Group 3 tumors are usually large and incarcerate the carotids. Here the tumor must be approached with great care and vessel replacement should be considered.6

Hua et al in a study of 58 patients (62 lesions) with carotid body tumour who received surgery in their 10 years study period. Of these, 17 lesions were categorized into Shamblin grade I, 33 were grade II, and 12 were grade III.9

Davidovic et al in their study of total 12 cases, they found 7 of tumors were type II and 5 were types III as per Shamblin classification.7

Jacqueline A et al stated in their study that carotid body tumors and paragangliomas of the head and neck may attain large size and infiltrative growth and local recurrence may lead to death. Although it is estimated that less than 10% of paragangliomas are malignant, may be as high as 50%. It is important to remember that all have malignant potential and it is not always possible to predict malignant behavior based on histologic features alone. They found some worrisome histologic features include necrosis, extensive capsular or vascular invasion, increased mitotic activity, atypical mitotic figures, loss of a well-differentiated zellballen pattern with loss of the S-100 positive sustentacular cell population and tumor cell spindling.10

The first surgical excision of a carotid body paraganglioma was done by Marchand in 1891.4

Muduroglu A et al in a case series they concluded that surgical excision of Carotid body tumours is a very effective and safe procedure with a low rate of major neurovascular complication and mortality. Early detection and complete surgical removal of Carotid body tumours improve the outcomes.11

In carotid body tumour, many tiny feeders exit the distal common carotid and proximal internal carotid arteries that are too small to be catheterized selectively to the degree necessary to avoid reflux of particles into the Internal carotid artery (ICA); although major feeders from the External carotid artery (ECA) are usually present, particularly the ascending pharyngeal, superior thyroidal, lingual, facial, and carotid body arteries. These can be selectively catheterized, and much of the tumor may be appropriately embolized with tiny spheres or particles to make surgery easier with less blood loss. Some surgeons are not interested for preoperative embolization, believing that a potential secondary inflammatory reaction from embolization makes it more difficult to define tumor planes for removal.12

Konstantinos et al concluded in their study of adjunct endovascular interventions in the surgical management of carotid body tumour, that the use of preoperative selective endovascular embolization in patients with Shamblin II and III carotid body tumours may be beneficial when competently performed by interventional physicians proficient in the neurovascular microcatheterization/embolization procedures.13

Shamblin WR et al in their study stated that 70 out of 90 patients were operated within their study period in Mayo Clinic. In 49 cases including one patient with bilateral tumors total excision was done. Mortality rate was 5.7 per cent, usually related to carotid arterial damage or ligation. There were no tumor recurrences, although cervical node metastasis was noted in one patient and spinal metastasis in another.6

Jena et al reported successful excision of a large carotid body tumour with conventional general anesthesia with controlled ventilation technique in their case report. Because of its large size, they highlighted difficulty in surgical and anesthetic management.14

Nelson Mesquita Junior et al reported two cases of carotid body tumours. Both were female patients and both were treated surgically. One case was treated with block resection of the tumor, while the second patient, who had an early stage tumor, was treated with subadventitial resection of the lesion.15

Ma, et al. stated in the procedure, by using blood vessel blocking bands for the convenient control of the blood flow in the common carotid artery and the proximal end of the tumor artery were blocked. Then they carefully separated the vessel wall to remove & secured the blood vessels feeding the tumor. In this way, they were successful for 10 cases. They failed in the rest 8 cases, where the tumor body and the external carotid artery were resected in five cases and in other 3 cases they resected the tumor body, and the internal and external arteries. Reconstruction of the common carotid and the internal carotid artery were performed in patients undergoing resection of the internal carotid artery.8

Hua et al operated in 52 lesions in their study period with resection of carotid body tumour and the external carotid artery was performed for 9 lesions, and resection of carotid body tumour and the internal carotid artery was performed for 1 lesion. They concluded in their study with that surgical resection of carotid body tumour is recommended following diagnosis. Also the evaluation of imaging features and cerebral collateral circulation is important for treatment.9

Hua et al stated in the outcome of their surgical resection of 52 carotid body tumours, they did not found hemiplegia. Hoarseness and bucking were observed in 2 patients of Shamblin grade III, and were eliminated 1 month subsequent to the administration of hormone therapy and a nerve-nurturing strategy. No relapse or mortality was observed during the follow-up.9

Davidovic et al in their study stated that in a total of their 12 cases, subadventitial tumor excision was done in 7 cases and in rest 5 cases associated resection of both external and internal carotid arteries was carried out. The artery was repaired by end-to-end anastomosis in one case, with Dacron graft in one case, and with saphenous vein graft in 3 cases. There was no operative mortality. After a mean follow-up of 6.2 years (range 6 months to 20 years), there were no signs of tumor recurrence in any of the cases.7

Alberto Dias da Silva et al in their study reported a case of carotid body tumour underwent surgical resection in a periadventitial plane with sampling of jugular lymph nodes and found lymph node involvement and tumor cells on the margins of the pathologic specimen. Subsequent carotid resection with reversed interposition saphenous vein graft and modified neck dissection were performed. Follow up at 4 years was found uneventful.3

CONCLUSION

Carotid body tumour is not common but surprisingly not rare. It occurs in neck as a firm, painless mass below the angle of mandible. The half of the neck mass are thyroid origin, the rest of the half by inflammatory, congenital and in majority are the lymphadenopathy often metastatic. Lymph nodes of level II & III are at the same place of carotid bifurcation. Carotid body tumour is a rare neck mass arising from the carotid body, a chemoreceptor at the carotid bifurcation so it may mimicking to other commoner causes. As the Otolaryngologists are very much concern about the diversity of neck mass, careful examination is necessary to exclude such rare cause of neck mass. For the tumors that are in intimate contact with carotid arteries, the treatment by vascular surgeon is recommended.

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Study of lipid profile changes in cirrhosis of liver

Ahmed S,[1] Hasan AS,[2] Hossain MD [3]

ABSTRACT

Background: Cirrhosis is defined anatomically as a diffuse process with fibrosis and nodule formation. It is the result of the fibrogenesis that occurs with chronic liver injury. Lipoproteins are complexes of lipid and proteins that are essential for transport of cholesterol, triglycerides, and fat-soluble vitamins.

Objective: To assess the serum lipid profile changes in liver cirrhosis patients.

Methodology: The case control study had been carried out in the Department of Medicine, Different Privet Medical in Chandpur and Chandpur Medical College Hospital, Chandpur, between the periods of March 2017 and August 2018. Irrespective of the etiologies, 50 liver cirrhosis patients were taken as cases and 50 apparently healthy age- and sex-matched patients as controls.

Results: The mean serum total cholesterol, HDL, LDL, serum triglyceride was significantly higher in control group than case group ($p<0.05$). Serum total cholesterol and HDL level decreased more in CTP Class C as compared to CTP Class B ($P=0.01$, $p=0.032$ found statistical significance); which can be further correlated with the severity of cirrhosis. In the present study, the level of low-density lipoprotein (LDL), serum triglycerides were observed low in cases belongs to the CTP Class C in comparison to CTP Class B patients (P value found statistically non significant).

Conclusion: The mean serum total cholesterol, HDL, LDL, serum triglyceride was significantly higher in control group than liver cirrhosis group. Total cholesterol and HDL level decreased more in CTP Class C as compared to CTP Class B found statistical significance; which can be further correlated with the severity of cirrhosis.

Keywords: Lipid profile, cirrhosis of liver, Child-Pugh Class

Corresponding Authors:

Dr. Saleh Ahmed
MBBS, FCPS, Senior Consultant Department of Medicine
250 beded General Hospital Chandpur.
Mob. 01731190278 E- mail ; pdrc4006@gmail.ocm

Dr. Abu Sufian Hasan
Lecturer, Physiology Department
Aichi Medical College

Md. Delowar Hossain
Research Officer
Medical Academy for professional studies (MAPS).

INTRODUCTION

Cirrhosis is defined anatomically as a diffuse process with fibrosis and nodule formation. It is the result of the fibrogenesis that occurs with chronic liver injury. For reduced liver biosynthesis capacity, low level of triglyceride and cholesterol is usually observed in the chronic liver disease.1

Liver plays a vital role in lipid metabolism. It contributes both in exogenous and endogenous cycles of lipid metabolism and transport of lipids through plasma. Dyslipidemia seen in chronic liver disease differs from that found in most of the other causes of secondary dyslipidemias because circulating lipoproteins are not only present in abnormal amount but they also frequently have abnormal composition, electrophoretic mobility and appearance.2

Lipoproteins are complexes of lipid and proteins that are essential for transport of cholesterol, triglycerides, and fat-soluble vitamins. As we know, that the liver is the principal site of formation and clearance of lipoproteins; hence, liver disorders can affect plasma lipid level in a variety of ways. Hepatitis due to infection, drugs, or alcohol is often associated with increased very low-density lipoprotein (VLDL) synthesis and mild-to-moderate hypertriglyceridemia. Severe hepatitis and liver failure such as cirrhosis are associated with dramatic reductions in plasma cholesterol and triglycerides due to reduced lipoprotein biosynthetic capacity.3

Lipids are essential component of biological membranes, free molecules and metabolic regulators that control cellular function and homeostasis. Many clinical and biochemical parameters have been suggested in order to predict more

accurately the prognosis of cirrhotic patients and correctly assess their survival rate. Due to the high prevalence of chronic liver disease in our country, we conducted this study to determine lipid profile in patients with cirrhosis.4

METHODOLOGY

The case control study had been carried out in the Department of Medicine, Different Privet Medical in Chandpur and Chandpur Medical College Hospital, Chandpur, between the periods of March 2017 and August 2018. To assess the serum lipid profile changes in liver cirrhosis patients. Irrespective of the etiologies, 50 liver cirrhosis patients were taken as cases and 50 apparently healthy age- and sex-matched patients as controls. The case and control patients were selected from the indoor of Medical Wards, Medical Out Patients Department, relatives of the cases, and volunteers from the institution, respectively. Both case and control patients were belong to ≥18 to ≤80 years of age groups of both sexes. Patients with a history of other medical illnesses which may influence the serum lipid level such as diabetes mellitus, hypertension, chronic smoker, nephrotic syndrome, and/or thyroid dysfunctions were excluded from the study. All the relevant investigations have been done in the Department of Pathology, Radiology, and Cardiology of Different Privet Medical in Chandpur and Chandpur Medical College Hospital, Chandpur. The fasting blood samples have been collected from all study patients for lipid profile study. Lipid profile test was performed using the Randox RX Imola fully automated biochemistry analyzer machine. The diagnosis of liver cirrhosis was performed on the basis of typical signs and symptoms of the disease which have been further confirmed by detailed physical and clinical examinations along with the abdominal ultrasound imaging study and biochemical liver panel known as liver function tests which included mainly alanine aminotransferase and aspartate aminotransferase (ALT and AST), prothrombin time, serum bilirubin, albumin, and total serum proteins. The serological tests (hepatitis B surface antigen and antihepatitis C virus [HCV]) were also used to support the diagnosis of viral infections. Whenever needed cardiac 2D echocardiography, color Doppler portal vein study, upper gastrointestinal endoscopy, and ascitic fluid examination has also been done accordingly. The classification of plasma lipid level was done by the criteria adopted from the third report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel-III). Child-Pugh score (or the Child-Turcotte-Pugh [CTP] score or Child criteria) was used to assess the prognosis and severity of chronic liver disease, mainly cirrhosis. Grading of hepatic encephalopathy was done according to practice guideline by the European Association for the study of the liver and the American Association for the study of liver diseases. Chi-square test was used for the comparison of frequency and percentage distribution in cases and controls. Student t-test was applied to compare mean and standard deviation (SD) of difference between cases and controls. Level of statistical significance was calculated with P value (<0.05 significance) consideration.

RESULTS:

Table I: Distribution of the study patients by age (n=100)

Age group (years)	Case (n=50)		Control (n=50)		P value
	n	%	n	%	
21-30	6	12.0	5	10.0	
31-40	15	30.0	12	24.0	
41-50	14	28.0	16	32.0	
51-60	12	24.0	13	26.0	
>60	3	6.0	4	8.0	
Mean±SD	44.6±15.2		46.7±12.4		0.450ns

ns=not significant
P value reached from unpaired t-test

Table I shows in case group 15(30.0%) patients belonged to age 31-40 years and in controls group 16(32.0$) patients belonged to age 31-40 years. The mean age 44.6±15.2 years in case group and 46.7±12.4 years in control groups. The difference was not statistically significant (p>0.05) between two groups.

Table II: Distribution of the study patients by sex (n=100)

Sex	Case (n=50)		Control (n=50)		P value
	n	%	n	%	
Male	37	74.0	39	78.0	0.639ns
Female	13	26.0	11	22.0	

ns=not significant
P value reached from Chi square test

Table II shows male as found 37(74.0%) in case group and 39(78.0%) in control group. Female was 13(26.0%) and 11(22.0%) in control group. The difference was not statistically significant (p>0.05) between two groups.

Table III: Distribution of cases according to primary etiology of liver cirrhosis (n=50)

Etiology of liver cirrhosis	Frequency	Percentage
Alcoholic	27	54.0
HBV	7	14.0
HCV	1	2.0
Others	12	24.0

Table III shows majority 27(54.0%) patients had alcoholic, 7(14.0%) had HBV, 1(2.0%) had HCV and 12(24.0%) had other etiology.

Table IV: Comparison of lipid profile with cases and controls (n=100)

Parameters (mg/dl)	Case (n=50)	Control (n=50)	P value
	Mean±SD	Mean±SD	
S. Total cholesterol	135.2±34.02	174.81±25.0	0.001s
HDL	33.12±6.15	45.17±7.20	0.001s
LDL	78.22±24.13	113.33±21.8	0.001s
Serum triglyceride	85.60±35.13	150.20±39.83	0.001s

s=significant, P value reached from unpaired t-test

Table IV shows that mean serum total cholesterol, HDL, LDL, serum triglyceride was significantly higher in control group than case group ($p<0.05$).

Table V: Case distribution according to CTP classification and scoring system (n=50)

Child-Pugh Class (CTP)	Frequency	Percentage
A	2	4.0
B	23	46.0
C	25	50.0

Table V shows 2(4.0%) had child Pugh class A, 23(46.0%) had B and 25(50.0%) had C.

Table IV: Comparison of lipid profile with cases and controls (n=100)

Parameters (mg/dl)	Child-Pugh Class A (n=2)	Child-Pugh Class B (n=23)	Child-Pugh Class C (n=25)	P value
	Mean±SD	Mean±SD	Mean±SD	
S. total cholesterol	119.1±32.5	146.5±41.7	125.4±29.5	0.010s
HDL	27.9±7.2	35.2±8.9	29.1±7.2	0.032s
LDL	94.6±19.4	82.1±20.2	74.6±23.1	0.273ns
Serum triglyceride	110.7±43.5	87.5±42.3	86.7±22.4	0.624ns

s=significant; ns=not significant, P value reached from ANOVA test

Table VI shows serum total cholesterol and HDL level decreased more in CTP Class C as compared to CTP Class B (P=0.010, p=0.032 found statistical significance); which can be further correlated with the severity of cirrhosis. In the present study, the level of low-density lipoprotein (LDL) and serum triglycerides were observed low in cases belongs to the CTP Class C in comparison to CTP Class B patients (P value found statistically non significant).

DISCUSSION

In this study observed that in case group 15(30.0%) patients belonged to age 31-40 years and in controls group 16(32.0) patients belonged to age 31-40 years. The mean age 44.6±15.2 years in case group and 46.7±12.4 years in control groups. The difference was not statistically significant ($p>0.05$) between two groups. Jatav et al.1 reported have been observed that the mean value of age distribution in cases was 43.47 ± 14.12 years and 43.21 ± 14.47 years in control patients, respectively. The P value was 0.914 which found statistically nonsignificant in both groups; hence, both groups were comparable in terms of age. The maximum numbers of cases, i.e., 23 (30.67%) were belong to 29–39 years of age group and the maximum numbers of control patients, i.e., 24 (32%) were belong to 40–50 years of age group. Muhammed et al.5 have been observed in their study that the majority numbers of patients were belong to the age of 51–60 years (39.8%). If consider the age-wise distributions of cases and controls, the results of the above study were found not relevant to the present study. Phukan et al.6 have been included the total number of n = 100 patients as cases and n = 50 noncirrhostic, nonalcoholic individuals as control patients in their study. They have also been found in their study that the most common affected age group was 41–50 years (41%). The above study data for the age group were found relevant to the present study. Sachdeva et al.7 reported age distribution of patients in between 31-40 was 0, 41-50 was 27(22 males, 5 females), 51-60 was 19 (16 males, 3 females), 61-70 was 3 (2 males, 1 female) and no patient in age group of 71-80 with total number of patients being 50 (40 males, 10 females).

In current study observed male as found 37(74.0%) in case group and 39(78.0%) in control group. Female was 13(26.0%) and 11(22.0%) in control group. The difference was not statistically significant ($p>0.05$) between two groups. In the Jatav et al.1 study, of total number of cases (n = 75), males were belong to n = 56/75, (74.66%) and female n = 19/75, (25.33%). The total number of control patients in our study was (n = 75) from which n = 58/75, (77.3%) were found male and n = 17/75, (22.7%) female. In another study was done by Nangliya et al.8 have been observed in their study that of 150 clinically diagnosed patients of cirrhosis (cases); 66% males and 34% females were included in the study, and results were compared to the age- and sex-matched 50 normal healthy control patients. Mandal et al.9 have been studies of total 120 cirrhotic patients as cases from which 80 were male and 40 female patients. Sachdeva et al.7 reported in cirrhotic group, there were 86 males and 14 females out of 100. In control group, 40 were males and 10 were females out of 50.

In this study observed that majority 27(54.0%) patients had alcoholic, 7(14.0%) had HBV, 1(2.0%) had HCV and 12(24.0%) had other etiology. Jatav et al.1 reported the maximum numbers of cases were observed with alcoholic etiology, i.e., n = 42/75, (56.2%) followed by hepatitis B, n = 11/75, (14.6%) and hepatitis C, n = 2/75, (2.6%). The remaining liver cirrhosis cases were diagnosed with etiology as others, which comprised n = 20/75, (26.6%) of cases. Verma et al.9 have been observed that the maximum number of patients with liver cirrhosis have hepatitis B virus-(HBV) related cirrhosis n = 55/139, (39.57%) which followed by other etiologies n =

39/139, (28.05%); alcohol n = 34/139, (24.46%); and HCV-related cirrhosis n = 11/139, (7.9%), respectively. Nangliya et al.8 have been observed in their study that the main etiologic cause for liver cirrhosis from 150 cirrhotic patients was the alcohol (42.6%) followed by HBV (20.7%), NASH (20%), other (10%), and HCV (6.7%), respectively.

In this study observed that mean S. total cholesterol, HDL, LDL and Serum triglyceride was significantly higher in control group than case group (p<0.05). Jatav et al.1 reported serum level of total cholesterol, high-density lipoprotein (HDL), serum triglycerides were observed significantly low in cases compared to apparently healthy control patients (P = −0.0001, statistically highly significant). Mandal et al.10 have been observed in their study that in patients with chronic liver diseases, with the exception of triglyceride level, there was a significant decrease in total cholesterol, LDL cholesterol and HDL cholesterol levels compared to the control group (P <0.05 found statistically highly significant). Kumar et al.11 have been observed in their study that the level of serum cholesterol, LDL, HDL, and VLDL cholesterol in cases was significantly reduced when compared to control group (P <0.000). They have also been observed that the levels of triglyceride were marginally reduced in cases (P <0.05). Nangliya et al.8 study result has showed that all the serum lipid profile parameters (total cholesterol, LDL, and HDL) were significantly (P <0.05) decreased in cirrhosis as compared to control group and the concentration of these study variables decreased with the severity of liver disease. They were also observed in their study that the triglyceride levels rather showed a decline in cirrhotic patients; however, it was not statistically significance. Phukan et al.6 have found in their study result that in patients with cirrhosis, the total serum cholesterol level was decreased. There was a significant decrease in serum HDL and LDL cholesterol compared to the control group (P <0.001). However, serum triglyceride level was significantly increased in alcoholic cirrhosis patients compared to the control group (P <0.001). Ghadir et al.12 have found in their study results that in patients with liver cirrhosis, there was a significant decrease in serum triglyceride, total cholesterol, LDL cholesterol, and HDL cholesterol levels compared to the comparison group (mean of 82 vs. 187, 138 vs. 184, 80 vs. 137, and 40 vs. 44 mg/dl, respectively); all P <0.05 found statistically significant. They have also concluded that the comparison of lipid profile with the pathologic progression of liver cirrhosis revealed that except for serum triglyceride level, other serum lipids diminish linearly with the progression of liver damage. The probable explanation for the reduced serum total cholesterol in liver cirrhosis patients was due to the decline in synthetic function and altered metabolism. Sachdeva et al.7 reported mean total cholesterol in cirrhotic study group was 147.29±17.14 and in control group was 163.86±17.63. Mean of total cholesterol was higher in control group than in study group that was statistically significant as p value <0.00001. Mean LDL cholesterol in cirrhotic study group was 83.55±16.08 and in control group was 92.88±17.15. Mean of LDL cholesterol was higher in control group than in study group that was statistically significant as p value 0.0014. Mean HDL cholesterol in cirrhotic study group was 39.63±3.33 and in control group was 43.88±3.61. Mean of HDL cholesterol was higher in control group than in study group that was statistically significant as p value <0.00001. Mean Triglycerides in cirrhotic study group was 120.27±19.80 and in control group was 135.28±18.69. Mean of triglycerides was higher in control group than in study group that was statistically significant as p value <0.00001. In similar previous Study by Suman et al.13 total cholesterol in cirrhotic study group was 147.54±35.46 mg/dl and in control group was 190.55±39.82 mg/dl. Mean of total cholesterol was higher in control group than in study group that was statistically significant as p value <0.05. It is evident from study by Mandal et al.10 that total cholesterol in cirrhotic study group was 141.5±46.69 mg/dl and in control group was 192±21.34 mg/dl. Mean of total cholesterol was higher in control group than in study group that was statistically significant as p value <0.05. Mean LDL cholesterol in cirrhotic study group was 83.55±16.08 mg/dl and in control group was 92.88±17.15 mg/dl. Mean of LDL cholesterol was higher in control group than in study group that was statistically significant as p value 0.0014.

In this study observed 2(4.0%) had child Pugh class A, 23(46.0%) had B and 25(50.0%) had C. Jatav et al.1 reported study, the maximum numbers of cases were belong to CTP Class C group, i.e., 40 (53.30%) and minimum numbers of cases were belong to CTP Class A group, i.e., 1 (1.30%). Ghadir et al.12 have observed in their study that according to Child-Pugh classification criteria, 11 (22%) of patients had score "A," 14 (28%) score "B," and 25 (50%) had score "C" from total 50 patients.

In this study observed that serum total cholesterol and HDL level decreased more in CTP Class C as compared to CTP Class B (P=0.010, p=0.032 found statistical significance); which can be further correlated with the severity of cirrhosis. In the present study, the level of low-density lipoprotein (LDL) and serum triglycerides were observed low in cases belongs to the CTP Class C in comparison to CTP Class B patients (P value found statistically non significant). Jatav et al.1 reported Serum total cholesterol and HDL level decreased more in CTP Class C as compared to CTP Class B (P = 0.03 found statistical significance); which can be further correlated with the severity of cirrhosis. In the present study, the level of low-density lipoprotein (LDL), serum triglycerides, and VLDL were observed low in cases belongs to the CTP Class C in comparison to CTP Class B patients (P value found statistically nonsignificant). Kumar et al.11 have been observed that the reduction in the LDL cholesterol level was proportionate to the severity of liver damage in

cirrhosis as detected by the Child- Pugh scoring system. In their study, they have included 100 cases of liver cirrhosis from which according to CTP classification belong to Class A - 18, Class B - 33, and Class C - 49 of cases, respectively. Their study results have showed that patients with liver diseases had lower lipid level, i.e., lower LDL in cirrhotic patients than in the comparison group. Besides, the amount of decrement in the serum LDL was significant with increasing severity of liver damage. Nangliya et al.8 study result has showed that all the serum lipid profile parameters (Total cholesterol, LDL, and HDL) were significantly ($P < 0.05$) decreased in cirrhosis as compared to control group and the concentration of these study variables decreased with the severity of liver disease. Ghadir et al.12 have observed in their study that according to Child-Pugh classification criteria, 11 (22%) of patients had score "A," 14 (28%) score "B," and 25 (50%) had score "C" from total 50 patients. They have also observed that there was a significant ($P < 0.05$) negative correlation between liver damage according to child criteria and serum total, HDL, and LDL cholesterol level ($P < 0.05$) so that more severe the liver damage is, the more decline in lipid level is detected, especially in LDL and total cholesterol levels. However, they were found no correlation between the serum triglyceride level and the extent of liver damage.

Mohammed et al.5 in their cross-sectional study of total 170 consecutive chronic liver disease patients which were analyzed over 1 year, it was observed that among the total 170 patients, 24 patients belong to CTP score Class A, 47 patients were in Class B, and 52 patients were in Class C. Hence, they have observed a significant ($P < 0.001$) negative correlation of all the lipid profile parameters with the severity of liver disease. Kumar et al.11 have observed that the levels of serum lipid included triglyceride, LDL, HDL, and total cholesterol in cases were significantly reduced in child score C compared to B and compared to A, i.e., decrease in lipids was proportional to the child class. They have also observed in their study that there was no significant variation in the VLDL levels in all the child classes. Nangliya et al.8 in their analytical cross-sectional study of 150 cirrhotic patients of their sex ranging in the age from 25 to 65 years were included in the study, and the results were compared to 50 age- and sex-matched healthy control patients. They had observed that when all cirrhotic patients were assessed for severity of disease as mild (Child A), moderate (child B), and severe (child C) as per Child-Pugh classification along with the serum total cholesterol, HDL, LDL, and triglyceride measurement, the results of the study showed that all the serum lipid profile parameters (which included total cholesterol, LDL, and HDL) were significantly ($P <0.05$) decreased in cirrhotic patients as compared to control group and the concentration of these study variables decreased with the severity of liver disease and the mean level difference was statistically significant ($P <0.01$) with the exception of serum triglyceride levels.

CONCLUSION

The mean serum total cholesterol, HDL, LDL, serum triglyceride was significantly higher in control group than liver cirrhosis group. Total cholesterol and HDL level decreased more in CTP Class C as compared to CTP Class B found statistical significance; which can be further correlated with the severity of cirrhosis.

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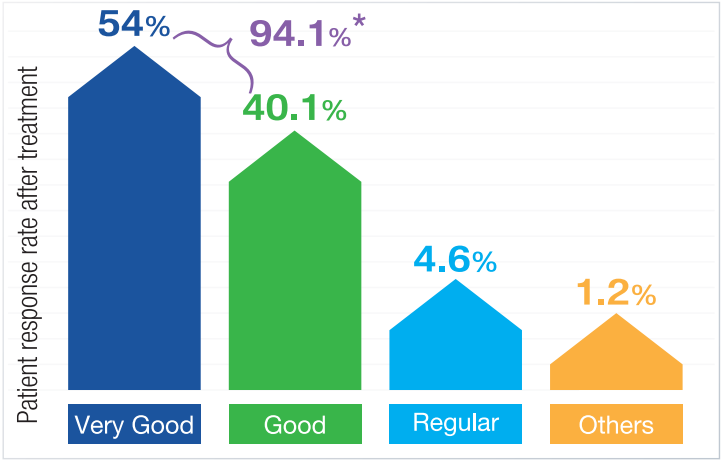

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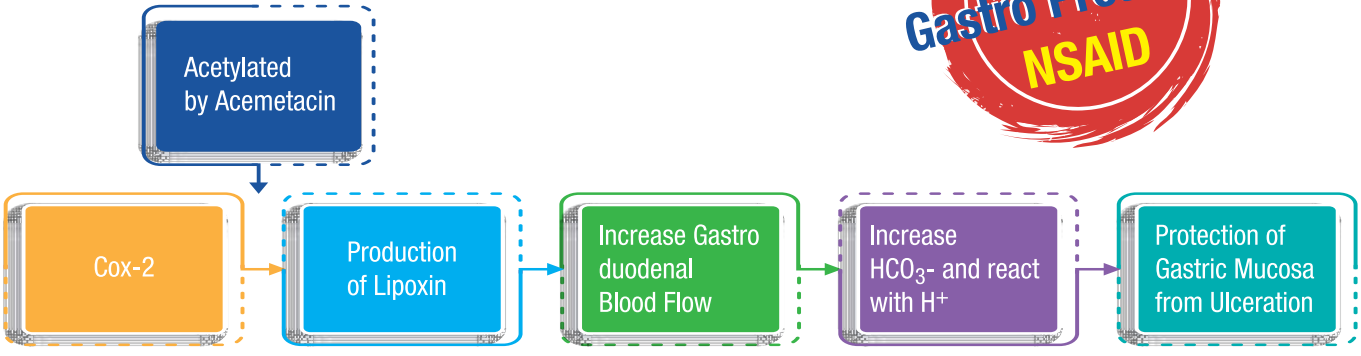

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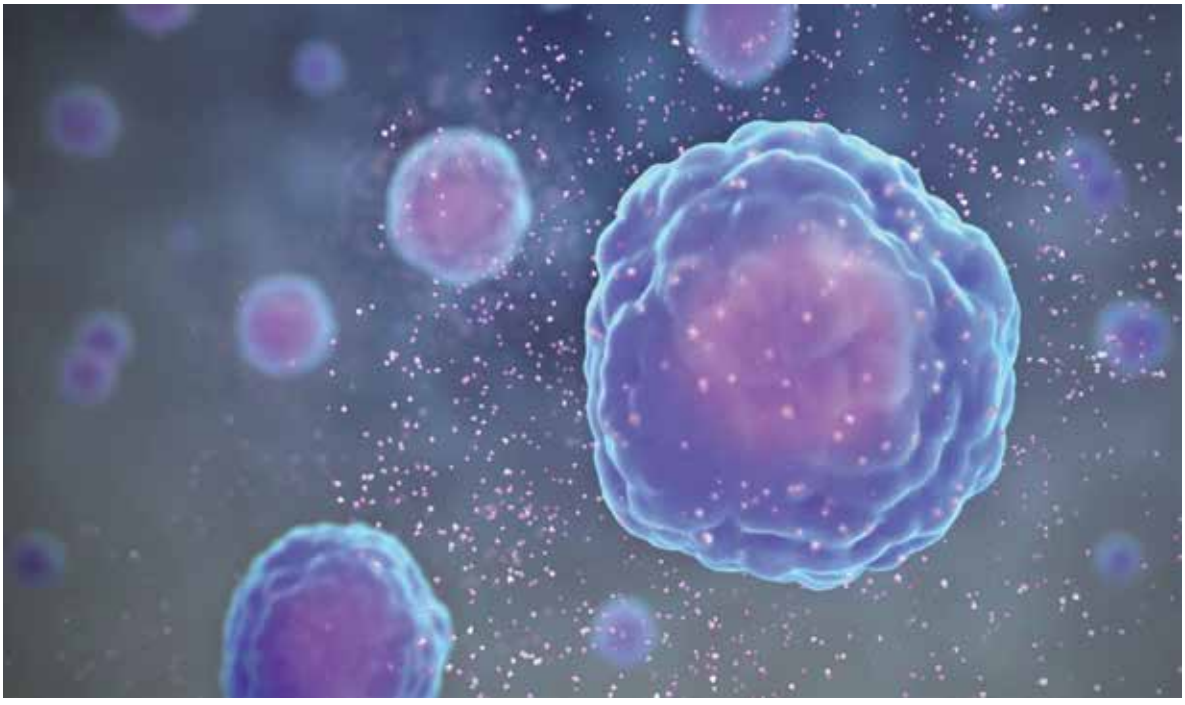
The ORION Medical Journal 2021 March;22-1(48): p35-37

Cytokine storm syndrome is a thread for COVID-19

Dr. Milton Sarker [1]



Author:
Dr. Milton Sarker
Medical Officer, Sumona Hospital
Research Assistant, North South University

Innate immunity is a person's inborn defense against pathogens that instruct the body's adaptive immune system to produce antibodies against viruses. Our immune system protects us always from different type of pathogens like bacteria, virus or any foreign invaders. Whenever the foreign invaders are trying to come from outside our immune system will find them & kill them. Mainly the immune cells of our immune system detect virus or foreign particles and they send out alert messages by releasing various proteins known as cytokines that causes an inflammatory response. However, sometimes our immune system are getting hyperactive. Instead of finding the foreign invaders and killing them it gets excited against itself. That is called hyper reactivity of our immune system which causes also release other signaling molecules, called catecholamine, that amplify this response further, triggering the release of more cytokines. This is finally called Cytokine storm syndrome.

Cytokines are proteins that acts as signaling molecules, which are responsible for conveying the messages between different immune system cells. So one immune system cells once find out the pathogens are going to inform the neighboring immune cells about the invasion. Everything is happening with the help of cytokines.

So the cytokine concentration must be regulated in our body and normally that concentrations are low or in balanced state. The moment we are infected with pathogens the cytokine concentration increases in our blood vessels. When the cytokines that raise immune activity become too abundant, the immune system may not be able to stop itself. However, their sudden release in large quantities can cause multisystem organ failure and death. Immune cells spread beyond infected body parts and start attacking healthy tissues, when organs do not get enough blood, a person can go into shock, risking permanent organ damage or death. This large concentration of cytokine also causes blood vessel wall thin which are responsible for ultimate damage of vessel wall.

CYTOKINE STORM IN COVID-19

Most people with COVID-19 do not develop cytokine storm and its symptoms. However, certain people may be more prone to developing cytokine storm from COVID-19 if they have specific genes that make their immune system react in certain ways.

The first hints that severe Covid-19 cases included a cytokine storm came out of Chinese hospitals near the outbreak's epicenter. Physicians in Wuhan, in a study of 29 patients, reported that higher levels of the cytokines IL-2R and IL-6 were found in more severe Covid-19 infections. In Covid infections all cytokines are releasing with more concentration in the blood stream that gives a signal for other immune cells to go to the infected cell for destroying the invaders. For this reason fluid component of the blood will be started to go outside from the blood vessels due to less concentrations. As a result blood cells are getting high in the blood vessels causes start to coagulate or clot. As this blood starts to clot inside the blood vessels and there is no supply of blood to the lung tissue. As well as all organ ultimately are not receiving the blood due to clot that causes failure of the function which is called multi organ failure.This happening mainly to the patient of Covid 19 due to Cytokine storm.

This is not the first time a cytokine storm has been linked to a pandemic. Scientists suspect that cytokine storms caused many of the fatalities in the 1918 flu pandemic and the 2003 outbreak of SARS, a virus related to the one that causes Covid-19.

CYTOKINE STORM SYNDROME SYMPTOMS

Cytokine storm can cause many different symptoms. Sometimes these are only mild, flu-like symptoms. Other times, these can be severe and life-threatening. Symptoms might include :

- Fevers and chills
- Fatigue
- Swelling of extremities
- Nausea and vomiting
- Muscle and joint aches
- Headache
- Rash
- Cough
- Shortness of breath
- Rapid breathing
- Seizures
- Tremor
- Difficulty coordinating movements
- Confusion and hallucinations
- Lethargy and poor responsiveness

Very low blood pressure and increased blood clotting can also be hallmarks of severe cytokine storm syndrome.

CAN WE DETECT CYTOKINE STORM?

Yes, in advance stage if we detect the cytokine storm syndrome that will be preventive. There are some chances that some marker proteins in the blood increases with concentration before the cytokine storm syndrome. They are :

1. Elevated ferritin (involved in infection response)
2. Elevations in inflammatory markers (like CRP)
3. Elevated IL-6

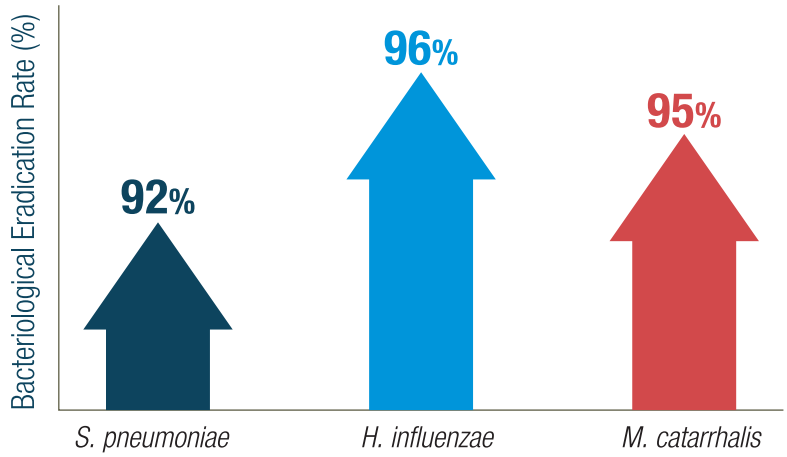
After COVID-19 infection, some patients develop systemic inflammatory response syndrome (SIRS) giving rise to a cytokine storm that contributes to increased mortality in ARDS. In summary, further experimentation is required to understand the changes in the immune response of patients with COVID-19 infection and the mechanisms of abnormal cytokine expression in COVID-19 pneumonia. Accurate prediction and targeted intervention during the course of COVID-19 pneumonia will be essential to improve patient survival. So for any treatment to work, doctors must catch the storm happening.

Percentage incidence of bacterial species within the spectrum of lower respiratory tract infections (LRTIs)[2]

Bacterial species	CAP*	AECB*
S. pneumoniae	20% - 60%	20% - 25%
H. influenzae	3% - 10%	40% - 45%
M. catarrhalis	1% - 3%	10% - 15%

*CAP: Community Acquired Pneumonia
*AECB: Acute Exacerbations of Chronic Bronchitis

Cefditoren (cefditor®200), Effective Against the Major Pathogens of LRTIs



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Accelerating vaccine rollout may provide greatest reduction in COVID19 mortality

The longawaited rollout of vaccines against severe acute respiratory syndrome coronavirus 2 (SARSCoV2) has finally begun, with several vaccines having received authorization in the USA, Europe, and Asia. However, the supply of vaccines is still limited, making it necessary to plan vaccine distribution over a large population strategically.

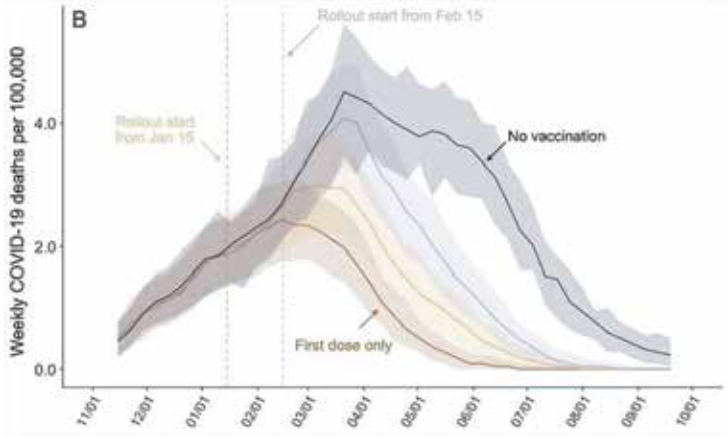
A thoughtprovoking preprint research paper posted to the medRxiv* server suggests that among several factors that could potentially contribute to the design of an optimal vaccine strategy aimed at the most significant possible reduction in COVID19 mortality, timing is likely to be the most important factor.

Study: The impacts of COVID19 vaccine timing, number of doses, and risk prioritization on mortality in the US. Image Credit: PalSand / Shutterstock

Current situation in the USA

The first two vaccines to receive emergency use authorization from the US Food and Drug Administration (FDA) were the Moderna and PfizerBioNTech vaccines, which are reported to have an efficacy of over 94% in preventing symptomatic COVID-19 infection. According to which frontline workers and others at high risk of infection were assigned top priority, a prioritized vaccination schedule was then rolled out.

Of the almost 30 million doses distributed among the states, about 10 million had already been administered by January 13, 2021. In the current study, the researchers modeled the effects of rolling out the vaccine at various times, in various orders of priority, and in single vs. double dose regimens, concerning the populationlevel mortality. The model was based on age and risk parameters.



Projected COVID19 mortality in the AustinRound Rock MSA from November 8, 2020 to September 17, 2021 under various vaccine rollout scenarios. Weekly incident COVID19 deaths per 100,000 assuming intermediate (70%) uptake (9) without vaccine (black) or under a tenphase riskbased rollout of a 95% efficacious infectionblocking, starting either January 15 (orange) or February 15 (purple). The brown line assumes that only first doses are administered starting January 15. Solid lines and shading indicate the median and 95% CI across 200 stochastic simulations, respectively.

Study model

The study model centered on Austin, a city in Texas, with the number of COVID19 deaths being projected over eight months following the deployment of two types of vaccines: one that prevents infection by rendering the vaccinated individual less susceptible to, and the other targeting symptomatic infection. The study is based on the assumption that the vaccine is leaky, resulting in a 95% reduction in susceptibility.

The date of vaccine rollout is either January 15 or February 15, and the weekly quota of vaccination is estimated to be 10 million. Vaccine allocation to each city is on a prorata or proportional basis.

The model compared three strategies, one that distributes the vaccine on a firstcome, firstserved basis; one which prioritizes three groups before vaccinating the general public, namely, those over 65 years, those with high risk medical conditions, or both; and a tenphase strategy with sequential administration of the vaccine to agerisk groups that are at descending risk for severe COVID19 outcomes. The study assumes that about 8% of individuals have become immune following natural infection by this date.

Infectionblocking vaccine

In the third scenario, with perfect riskprioritization being adhered to in vaccine rollout, with a vaccine that prevents infection, the researchers estimate a 52% reduction in deaths due to COVID19 compared to unvaccinated controls if 50% of the population is vaccinated. If 90% coverage is accomplished, 56% of deaths would be prevented.

If the coverage is low, that is, 50%, prioritybased vaccination is mostly irrelevant. At 90% coverage or more, the tenphase strategy is superior initially, following which those over 65, and young adults at high risk, are prioritized.

Symptomatic infectionblocking vaccine

With a vaccine that blocks only symptomatic infection, the effect of 50% coverage beginning January 15, using the tenphase strategy, is estimated to be capable of reducing the death toll by 40%, compared to 32% with unprioritized rollout strategies. Suppose the coverage under the tenphase strategy is 89% with a single dose. In that case, the estimated reduction is 50% and 66%, respectively, for a vaccine that blocks only symptomatic disease and one which prevents infection as well.

With these findings as a basis, highrisk groups should be prioritized. With a delayed rollout in February 2021, at only 50% uptake, giving the vaccine to those over 65 and those at high risk may prevent about 17,000 deaths in excess of a nonprioritized schedule.

Delay in rollout is the deadliest parameter

On the other hand, the single factor associated with a more significant number of deaths in both the USA and Europe is a delay in vaccine rollout, compared to either poorly prepared or executed prioritization plans or unwillingness to take the vaccine.

At this point, thousands of deaths are occurring daily in these countries. As new variants begin to take over in many of these regions, with even greater transmissibility, the process of ensuring that vaccination reaches susceptible people before the virus does is the greatest challenge. This is more so because, in contrast to preventive seasonal influenza campaigns, which occur before the influenza virus begins to circulate freely, COVID19 vaccination is emerging on a stage where the causative virus, severe acute respiratory syndrome coronavirus 2 (SARSCoV2), is in full cry already.

Singledose expanded programs

Some immunization programs have chosen to expand the reach of the first dose of the vaccine rather than complete the twodose regimen in as many people as possible. The hope is that the partial immunity elicited by the first dose will still be more effective in reducing the number of deaths, compared to achieving much higher immunity in half the number of people.

However, the USA has expressed disagreement with this approach, due to the absence of any clinical trial data demonstrating the utility of a singledose regimen. It is against this background that the current study models a situation in which providing just one dose of either type of vaccine, at 80% efficacy, would probably prevent more deaths than insisting on two doses for all participants.

What are the implications?

The researchers point out that more information must be gathered about vaccine efficacy following singledose trials since more assumptions are being made about the type of onset, the duration of immunity, and the eventual outcome of vaccination, whether prevention of infection, symptomatic disease, or any combination of both. The actual performance of the model also depends on the susceptible fraction of the population, the changes in the behavior of the people over time or following vaccination,

However, the study strongly suggests that distributing vaccines by priority should not slow down the rollout, as has been seen in the USA.

The researchers describe their plan: “Our projections suggest two immediate strategies to amplify the impact of COVID19 vaccines in the US—hybrid distributions that combine active outreach to priority groups with passive distribution to the general public and foregoing plans to hold second doses in reserve.”

Journal reference:
Wang, X. et al. (2021). The impacts of COVID19 vaccine timing, number of doses, and risk prioritization on mortality in the US. medRxiv preprint. doi: https://-doi.org/10.1101/2021.01.18.21250071. https://ww w.medrx-iv.org/content/10.1101/2021.01.18.21250071v1

An Overview of the SARSCoV2 Vaccines

Following the publication of the genetic sequence of the severe acute respiratory syndrome virus 2 (SARSCoV2) virus in January 2020, pharmaceutical companies worldwide have been racing to develop a safe and effective vaccine, with many reaching clinical trials in record time. In comparison, 22 months had elapsed following MERSCoV's outbreak in 2012 before an approved vaccine was available. The method of action and constituents of any particular vaccine may vary wildly, just as the viruses they protect against target different cells and take differing routes to infection.

SARSCoV2 has been well reported to induce a range of immune responses in patients, with some remaining nonsymptomatic while others just as heavily infected require hospitalization. This variability makes the development of a longlasting vaccine that will guarantee immunity throughout the whole population highly challenging. SARSCoV2 binds to the angiotensinconverting enzyme 2 (ACE2) receptor, expressed in many tissues and organs throughout the body, particularly in the lungs, gut, and brain. The wide presentation of the ACE2 receptor is partly the reason for the highly variable symptoms of COVID19.

Tcells are responsible for immune memory, and the generation of high affinity antibodies and SARSCoV2 infected patients tend to show elevated antibody levels for significant periods postinfection.

Unlike most other vaccines that are either inactivated (consist of virus particles that have no diseaseproducing capacity) or attenuated (made less harmful or virulent), many of the vaccines approved for use against COVID 19 so far are nanotechnologybased.

Viacheslav Lopatin / Shutterstock.com

mRNA vaccines

Two of the earliest companies to announce a successful vaccines were Moderna and PfizerBioNTech, both of which utilize lipid nanoparticles to encapsulate an mRNA payload. The mRNA encodes for the production of an antigen known to be specific to SARSCoV2, allowing the cell's machinery to produce the antigen to which the body will then develop immunity.

The use of a lipid nanoparticle carrier can potentially provide several benefits, including the possibility of direct cytoplasmic delivery and increased specificity towards antigenpresenting cells. The full details of each formulation are yet to be released. However, the PfizerBioNTech lipid nanoparticle is known to be slightly cationic, which could potentially aid in cell internalization due to the slight negative charge of the cell membrane.

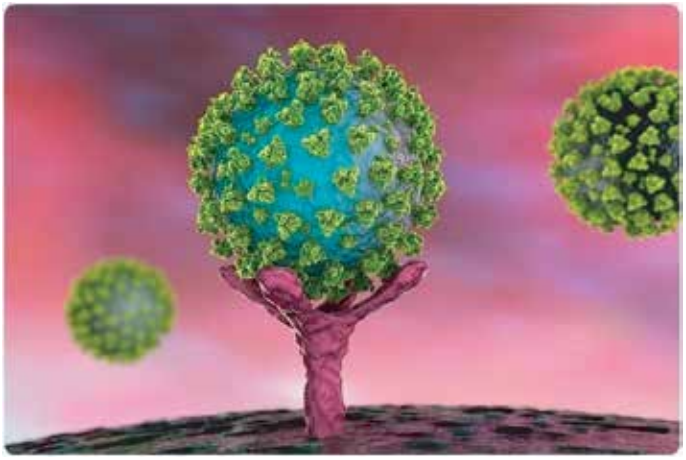
Both the Moderna and PfizerBioNTech vaccines use mRNA that encodes for the spike protein of SARSCoV2, which binds with the ACE2 receptor. The spike protein consists of two subunits, the first of which is responsible for the initial binding with ACE2, while the second promotes viral fusion.

The Moderna vaccine, mRNA1273, specifically encodes for the prefusion form of the protein and is largely intact besides two aminoacid substitutions at positions 986 and 987 that help to keep the protein stable in this pre fusion state. The surrounding lipid nanoparticle is composed of four lipids, the exact structure of which is yet to be announced. However, previously developed lipidnanoparticle based vaccines from Moderna contain 1,2 distearoylsnglycero3phosphocholine, cholesterol, and polyethylene glycol lipid, which may also be the case here.

The mRNA utilized by the PfizerBioNTech vaccine (BNT162) encodes for the receptorbinding domain of the spike protein only, found on the first subunit of the protein. The mRNA has been modified to incorporate 1 methylpseudouridine, which aids in reducing the immunogenicity of the mRNA and increases translation rate, most likely through improved stability of the molecule, although this has yet to be entirely elucidated.

Again, the exact formulation of the lipid nanoparticle carrier has not been published, though past papers from the company indicate it could contain phosphatidylcholine, cholesterol, and polyethylene glycollipid.

These companies' vaccination technology has not yet been approved following initial clinical trials for any other disease. In this case, the comparatively quick development time and urgency of the situation have brought this technology to the fore.
Since the vaccine itself does not carry the antigen, there is little chance of neutralization in the serum, and repeated booster regimens are less prohibitive. Since RNA replicates in the cytoplasm, it does not need to be localized to the nucleus, like DNA. However, DNA vaccines generally offer more longterm replication and are less likely to require additional boosts. In light of this, several other companies have instead been working towards a DNAbased viral vector vaccine.



onceptual illustration of SARSCoV2 virus binding to an ACE2 receptor on a human cell. Image Credit: Kateryna Kon / Shutterstock.com

Viral vector vaccines

Adenoviruses are simple nonenveloped viruses that contain a linear double stranded DNA genome, and are responsible for a variety of diseases including the common cold. Adenovirus vectors are used in vaccines to express foreign antigens and thus stimulate an immune response, achieved by replacing sections of DNA within the adenovirus.
Adenoviral DNA does not integrate into the genome of the host, and is not replicated during cell division. Since the adenovirus is sourced from a family of common viruses including the common cold, many patients have already developed neutralizing antibodies, leading to the use of adenoviruses that had originally evolved to infect other species, and to which humans do not have immunity.
The OxfordAstraZeneca vaccine (ChAdOx1) utilizes an adenovirus vector derived from the chimpanzee, incorporating genetic sequences that instruct cellular machinery to produce the fulllength spike protein of SARSCoV2. Some changes were made to the genetic sequence that would prevent replication and improve translation, specifically by deleting E1 and E3 and incorporating a tissue plasminogen activator leader sequence.
The Chinese vaccine company CanSino took a similar approach, though it used an adenovirus native to humans often employed as a vaccine vector: adenovirus type 5. The company noted that around half of their early participants had preexisting immunity towards adenovirus type 5, compared to only 1 in 98 patients for the chimpanzee sourced OxfordAstraZeneca vaccine.
Both vaccines demonstrated some adverse effects in early clinical trials, including mild to moderate pain, fatigue, and headache. The Oxford AstraZeneca vaccine was coadministered with the antiinflammatory drug acetaminophen as a precaution that seemed to lessen these problems.

Efficacy and alternatives

Dozens of additional companies are working towards creating a safe and reliable vaccine, some utilizing the technologies described above. In contrast, others rely on more classical attenuated or inactivated virus vaccine platforms. However, the latter are rarely suitable for use with immunocompromised individuals,
making them less than ideal for protecting those most vulnerable.
Each of the three vaccines discussed in detail here, BNT162 (PfizerBioNTech), mRNA1273 (Moderna), and ChAdOx1 (OxfordAstraZeneca), have been found to possess an acceptable safety profile across phase I, II, and III clinical trials, having now been administered to many thousands of patients from across the globe. They all report a high degree of efficacy, stated to be as high as 95% depending on the age group, sex, ethnicity, infection status, and dosing regimen.

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Hyperinflammatory conditions drive gender differences in COVID19 severity and mortality

Coronavirus disease 2019 (COVID19) is a highly contagious disease characterized by respiratory failure and death in severe conditions. It is caused by a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARSCoV2), which originated in Wuhan, China, in late 2019.

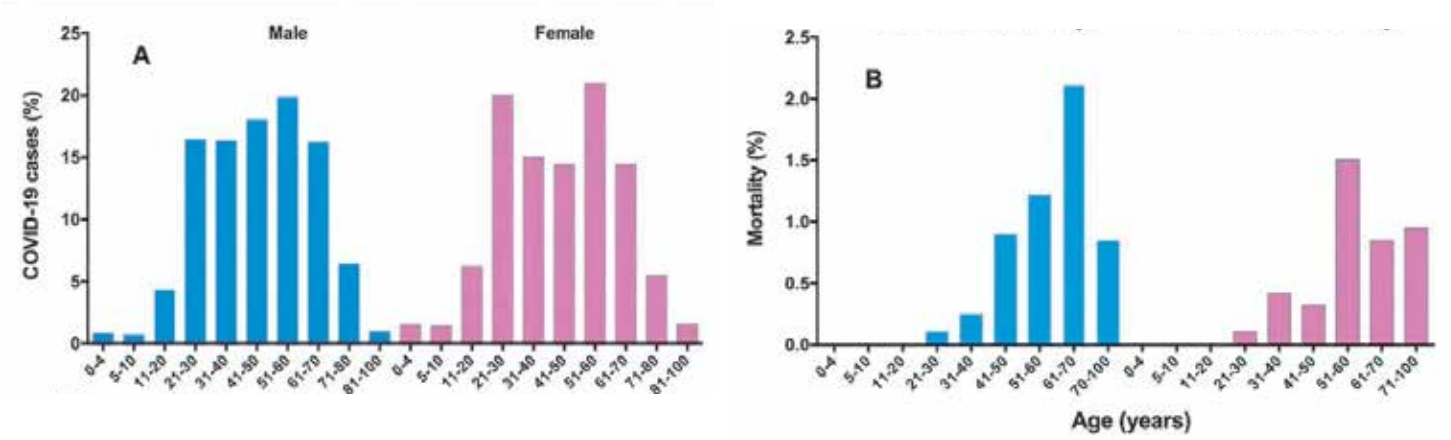
COVID19 is associated with many inflammatory conditions such as macrophage activation and cytokine storm triggered by increased production of interleukins, Creactive protein (CRP), and tumor necrosis factorsα (TNF α). Coagulopathy and renal and liver inflammation have been reported to increase the mortality risk in severe COVID19 patients. Evidence from other studies suggests that COVID19 causes more deaths in males than females.

Analyzing gender differences in hyperinflammatory conditions resulting in COVID19 mortality

Recently researchers from India analyzed gender differences in COVID19 related hyperinflammatory conditions resulting in mortality in Indian patients. The study is published on the preprint server, medRxiv*.

The study group included 2,997 patients treated at Era's Lucknow Medical College and Hospital (ELMCH), ERA University, in northern India. Blood samples were randomly collected from 150 COVID19 patients with severe disease requiring oxygen. The study was conducted between August 10 and September 15, 2020.

The team of researchers analyzed HICs and related laboratory markers such as hematological dysfunctions (lymphocytopenia and neutrophil to lymphocyte ratio), hyperferritinemia (serum ferritin), cytokinemia (Creactive protein levels), coagulopathy (Ddimer), renal inflammation (blood urea and creatinine), liver inflammation (aspartate aminotransferase), and hyperglycemia (random blood glucose). The cutoff limits of these markers used for analyzing the mortality risk in male and female COVID19 patients were defined based on a scale validated by Webb et al. (2020).



Trend of COVID19 distribution (A), and mortality proportion (B), in male and female patients of different age groups. A total of 2997 COVID19 cases (2,030 males and 967 females) were included in this study.

Results show different HICs associated with disease severity and mortality in male and female patients

In the study cohort comprising hospitalized COVID19 patients, the analysis of HICs showed that hyperferritinemia (odd ratio: 2.9, 95% CI 1.46.0), hepatic inflammation (odd ratio: 2.0, 95% CI 0.527.40), hematological dysfunctions (odd ratio: 2.10, 95% CI 1.04.2), and coagulopathy (odd ratio: 1.5, 95% CI 1.50, 95% CI 0.504.60) were more prevalent and severe in male patients with COVID19.

"Although nearly 3035% male and female COVID19 patients had renal inflammation, and ~40% had hyperglycemia, both these criteria were strongly associated with mortality in both male and female COVID19 patients."

About 86% male to 64% female COVID19 patients had lymphocytopenia. While cytokinemia (odd ratio: 1.60, 95% CI 0.37 7.30) and hyperferritinemia (odd ratio: 1.70, 95% CI 0.377.43) were strongly linked to mortality in male patients, hematological dysfunctions (odd ratio: 1.70, 95% CI 0.2710) and coagulopathy (odd ratio: 3.30, 95% CI 0.3135) were associated with mortality in female patients.

Almost 80% of COVID19 patients of both genders who died had ≥2 HIS criteria. Chronic renal disease was linked to more deaths in female patients than males (odds ratio: 2.0, 95% CI 0.54 7.4).

Although the proportion of mortality was slightly higher in male (6.3%) compared to female (4.5%) COVID19 patients, survival curves of both genders were not different (hazard ratio: 1.02, 95% CI 0.711.40, P = 0. 953).

"Thus, our findings provide experimental validation for the application of various criteria in predicting the risk of severity and mortality in COVID19 patients as proposed recently."

Findings could help develop genderbased treatment and care for COVID19 patients

The authors concluded that distinct HICs were associated with disease severity and mortality in male and female COVID19 patients based on their findings. Coagulopathy and renal dysfunction were specifically harmful to female patients with COVID19 and the proportion of overall mortality was about 5.3%.

According to the authors, the results suggest that gender differences in severity of COVID19 and related mortality arise as a result of differences in HICs. They believe that the results could help in the development of gender based care for COVID19 patients.

"These findings are in agreement with other studies, which have reported that diabetes/hyperglycemia and renal injury/inflammation substantially increase the risk of mortality in COVID19 patients."

Journal reference:
Hyperinflammatory conditions, gender differences and mortality in Indian COVID19 patients Fouzia Shoeb, Imran Hussain, Gazala Afrin, Shagufta T. Mufti, Tabrez Jafar, Syed T. Raza, Farzana Mahdi, medRxiv 2021.01.19.21250134; doi: https://-doi.org/10.1101/2021.01.19.21250 134, https://www.medrx-iv.org/content/10.1101/2021.01.19.21250134v 1

WHO: Rich and poor vaccine divide worsening

WHO said it needed $26 billion this year for its program aimed at speeding up the development

The Covid-19 vaccine divide between rich and poor nations is worsening by the day, the World Health Organization warned on Monday, insisting the failure to distribute doses fairly could cost the global economy trillions of dollars.

The WHO said it needed $26 billion this year for its program aimed at speeding up the development, procurement and equitable delivery of vaccines, treatments and tests to beat the coronavirus pandemic.

"Rich countries are rolling out vaccines, while the world's least-developed countries watch and wait," lamented WHO director-general Tedros Adhanom Ghebreyesus.

"Every day that passes, the divide grows larger between the world's haves and have nots," he told a press conference.

"Vaccine nationalism might serve short-term political goals. But it's in every nation's own medium and long-term economic interest to support vaccine equity."

Tedros cited a study commissioned by the Research Foundation of the International Chamber of Commerce, which represents more than 45 million companies in over 100 countries.

"Vaccine nationalism could cost the global economy up to $9.2 trillion, and almost half of that — $4.5 trillion — would be incurred in the wealthiest economies," he said.

The report said that the financial damage of the pandemic in wealthy countries could not be fixed unless the impact of the crisis in developing nations was also addressed, due to the inter-connectivity of economies around the globe.

Tedros said investing in the so-called ACT Accelerator programme, to try to curtail the pandemic on a pooled and equitable basis, was therefore not charity, but simply "economic common sense".

Tedros said that exactly a year ago, fewer than 1,500 cases of Covid-19 had been reported to the WHO, including just 23 outside of China, where the first clusters of infections were discovered.

More than 2.1 million deaths have been recorded since then.

"This week, we expect to reach 100 million reported cases," said Tedros.

"Numbers can make us numb to what they represent: every death is someone's parent, someone's partner, someone's child, someone's friend.

"Vaccines are giving us hope, which is why every life we lose now is even more tragic. We must take heart, take hope and take action."

He urged people to stick to the basics of physical distancing, hand washing, avoiding crowds and wearing masks while waiting their turn to get immunized.

Michael Ryan, the WHO's emergencies director, said only one disease, smallpox, had ever been eradicated, so the availability of vaccines against Covid-19 did not mean the disease could be wiped of the face of the Earth.

"The bar for success is reducing the capacity of this virus to kill, put people in hospital and destroy our economic and social lives," he said.

Meanwhile Bruce Aylward, the WHO's ACT Accelerator hub chief, said the goal of vaccination was merely to take the heat out of the pandemic by the end of 2021.

Intern Doctors Reception Program

Kushtia Medical College & Hospital

An Intern Doctors Reception Program was arranged by the Intern Doctors Association of Kushtia Medical College & Hospital on 03 December, 2020 at Kheya Restaurant, Kushtia. Dr. Nurunnahar Begum, Deputy Director, Kushtia General Hospital adorned the seat of Chairperson & Dr. Taposh Kumar Sarker, RMO, KGH attended the program as a Chief Guest. Near about 50 intern doctors attended the program. The program ended by Exclusive Raffle Draw with delicious Dinner.

Abdul Malek Ukil Medical College & Jananeta Nurul Haque Adhunik Hospital, Noakhali

An Intern Doctors Reception Program was arranged by the Intern Doctors Association of Abdul Malek Ukil Medical College & Jananeta Nurul Haque Adhunik Hospital, Noakhali on 05 January, 2021 at Green Hall Chinese Restaurant, Maizdee. Dr. M.A Numan, President, BMA, Noakhali will grace the Program as a Chief Guest, Dr. Md. Mahfuzur Rahman Babul, President, Teacher's Association, AMUMC, Noakhali as a guest of honor & Dr. Md. Mahbubur Rahman, General Secretary, SWACHIP, Noakhali will also attend the program as a special guest. More than 50 Intern Doctors attend the Program & enjoying Exclusive Raffle Draw Session & Delicious Dinner.

Medical Services Department (MSD) of Orion Pharma Ltd. successfully arranged momentous number of Scientific Seminar, Round Table Meeting & Clinical Meeting in different venues of Bangladesh.

Scientific Seminar

New Star Lab Ltd. Chittagong

A Scientific Seminar cum AGM on "Update management of Diabetes Mellitus" was arranged by the New Star Lab Ltd. Chittagong on 29th December, 2020 in Well Park Restaurant. Dr. Mozibul Hoq Sirazee appeared as the Speaker & Prof. Dr. Mozammel Haque Sharifee, Head, Department of Eye, CMCH adorned the seat of Chairperson.

Patuakhali Medical College & Hospital

A Scientific Seminar has been organized on 17th September, 2020 by the Department of Medicine, Patuakhali Medical College Hospital. Asst. Prof. Dr. F M Atiqur Rahaman, FCPS (Medicine) enlighten the Program as the Chairperson. All Intern Doctors of the & Senior Doctors of the PMCH are cordially attended the program. The Program ended with exclusive Raffle Draw session conducted by MSD Department.

Evercare (Apollo) Hospital, Dhaka

A Scientific Seminar has been organized by Evercare (Apollo) Hospital on 10th March, 2020. It was very much updated discussion on Corona Virus Disease 2019 (COVID-19)- An Update in the presence of program chairperson Prof. Dr. Abul Kalam Azad, Ex Director General, DGHS, Dhaka. Dr. Nur Nahar Ayrin, Register, Internal Medicine & Dr. Nikhat Shahla Afsar, Sr. Consultant, Internal Medicine was the keynote Speakers of the Scientific Session. All Doctors attended the session & enjoyed exclusive lunch. Orion Pharma Ltd. proudly coordinated the programme as Scientific Partner.



Sir Salimullah Medical College & Mitford Hospital, Dhaka

On 12th February, 2020 A Scientific Seminar was arranged by the Obs & Gynae Department of Sir Salimullah Medical College & Mitford Hospital, Dhaka at the Conference Room on "Comprehensive Newborn Care". Asso. Prof. Dr. Mala Banik was the keynote presenter of the program. Prof. Dr. Forhat Hossain, Head, Dept. of Obs & Gynae, SSMCH enlighten the Program as the Chairperson.


Round Table Meeting

Centre for The Rehabilitation of the Paralysed (CRP), Savar

A RTM has been organized on 14th January, 2021 by CRP, Savar. Dr. Sayeed Uddin Helal, Neurosurgeon & Head, Medical Services Wing, CRP, Savar was the Chairperson of the Program. About 15 Consultants attended the session and taken refreshment on behalf of Orion Pharma Ltd.

Khulna Medical College & Hospital, Khulna

A RTM was arranged on 19th March, 2020 by the Department of Pediatrics of Khulna Medical College & Hospital, Khulna. Prof. Dr. AKM Mamunur Rashid, Head, Dept. of Pediatrics, KMCH was the Chief Guest of the Program. All members of the departments were present in the program. It was concluded with luscious refreshment on behalf of Orion Pharma Ltd.

Upazila Health Complex, Karimganj

On 24th January, 2021 A RTM has been organized by Upazila Heath Complex, Karimganj with the topic of BAD EFFECTS OF IMPURITIES IN PRESENT PHARMACEUITCALS API. Dr. Riyadh Shahed Rony, UH & FPO, Karimganj was the Chief Guest of the Program. More than 22 Doctors are attended the session followed by exclusive lunch. OPL was the scientific partner of this great event.


OUR GLORIOUS SUCCESS

Orion Pharma Ltd. won the **Silver Award** at the 7th "Institute of Chartered Secretaries of Bangladesh (ICSB) National Award for Corporate Governance Excellence," in the "Pharmaceutical and Chemical Companies," category on January 23, 2021. Honorable Managing Director Mrs. Zareen Karim received the prestigious award from Tipu Munshi, MP, Commerce Minister, Government of the People's Republic of Bangladesh at Radisson Blu Dhaka Water Garden.

Orion Pharma Ltd. is one of the major pharmaceutical companies of Bangladesh which has been contributing to improving the human health care of the country by providing quality branded-generic pharmaceuticals. The company was also awarded with the ISO-9001: 2015 Certificate in 2018 for serving its valued customers with products of excellent quality.

Honorable Managing Director Mrs. Zareen Karim received the 20th ICAB National Award for best presented Annual Report under the category "Manufacturing Sector". from Tipu Munshi, MP, Commerce Minister, Government of the People's Republic of Bangladesh at Pan Pacific Sonargaon Hotel, Dhaka on November 26, 2020.

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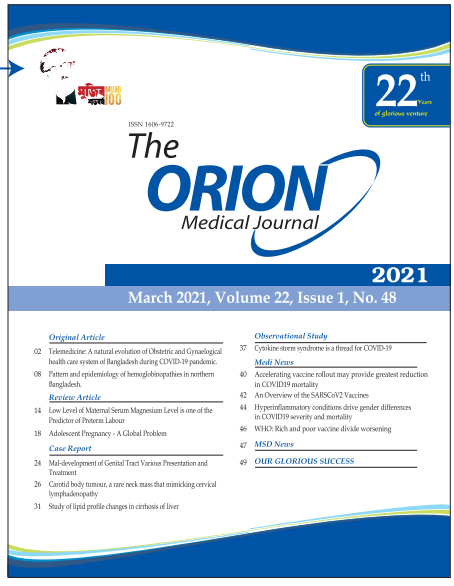

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Excellent Efficacy
Works Instantly within **5 minutes**

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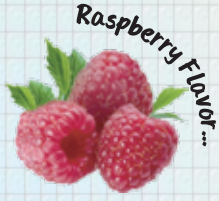

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