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CONTENTS

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The manuscripts submitted in this journal should not have been published in any other journal before. All submitted papers are subjected to be reviewed by the board of reviewers and editorial panel before accepting any manuscripts. The unaccepted articles will not be sent back, but will be destroyed. Proof corrections by the authors are well appreciated.

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The body of the manuscript/text should be divided into the following sections: i) Introduction, ii) Materials and Methods, iii) Results (include tables and diagrams), iv) Discussion, v) Conclusion, and vi) Acknowledgement if any (particularly on funding, study subjects and co-author).

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It includes a short yet robust background purpose and the rationale for the study (or summarized observation), including pertinent references, but data or conclusion from any work should not to be included.

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Place explanatory matter in footnote, not in the heading. For uniformity of style, authors should use symbols for footnotes such as 51.7 etc.

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Acknowledgements

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1. Parkin DM, Clayton D, Blook RJ, Massyer E, Fried HP, Iranov E et al. Childhood leukaemia in Europe after Chernobyl: 5 years follow up. Br J Cance 1996; 73: 1006-1012
2. Paganini HA, Chao A, Ross RK, Henderson Aspirin use and chronic diseases: a cohort st of the elderly. BMJ 1989; 299: 1247-1250

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(ii) Books

1. Gyton AC, Hall JE The thyroid metabolic hormones In Textbook of Medical Physiology. 10th edn. NewTork: WB Saunders Company. 2000: 858-86

(iii) Internet

I. Harverd medical school Available https:// en.wikipedia. org/wiki/havard medical college, accessed October 2011

(iv) Thesis/Dissertations

1. Khan MAH. Lipid profile and renal function status of hypothyroid patients [MD Thesis). Dhaka Bangabandhu Skeikh Mujib Medical University:2005

(v) Scientific or technical report

1. Akutsu T. Total heart replacement device. Bethesda MD: National Institutes of Health, National Heart and Lung Institute, 1974 Apr report No. N1H-NHLI-69 2185-4 Ethical approval

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- study concept
- study design
- data collection & processing
- statistical analysis
- manuscript writing

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Editorial

Glimpse from Nutrition Rehabilitation Unit (NRU), Department of Pediatrics, Ad-din Women's Medical College and Hospital: Trend and Rehabilitation for Childhood Protein Energy Malnutrition

Ashraf Uddin Ahmed[1], ARML Kabir[2], Dilruba Akter[3], Masuma Khan[4]

The initial mission and vision:

Current Ad-din Women's Medical College and Hospital **(AWMCH)** was formerly known as **'Ad-din hospital'**- serving only the women and children that started in 1997 in partnership with the Save the Children Fund (**SCF-UK**) at the premises of **CNU** (Children Nutrition Unit) after the agreement between **Ad-din Welfare Trust** and the **SCF, UK**. This was inaugurated in April, 1998 by the Hon'ble Prime Minister of GoB **Sheikh Hasina**.

The chief aim of **AWMCH** was to provide low cost health care service deliveries making it affordable for the low-income settings/ communities to deliver quality care rendered by specialist physicians (child health experts). It started its OPD and indoor services for mother and children with 20 free beds in indoor to serve the severely malnourished children (Nutritional Rehabilitation Unit: **NRU**).

With the gradually increasing demand and patient loads, Ad-din Hospital's **Pediatric OPD** started previously, divided into two wings: for **under 1-year** (0-12 months) and **above 1-year** old children. Other services at the Pediatric OPD consisted with growth monitoring and nutrition-promotion activities (including anthropometric assessment), nutritional counseling, breastfeeding corner, lactation management corner, immunization and/or family planning facilities.

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Scopes and Advantages of Nutritional Rehabilitation Unit (NRU):

To assist the poorer communities, 20 free-beds were allocated for NRU on special ground located at the pediatric indoor to serve the malnourished children attending AWMCH who are being assessed for their nutritional status, at first, using following anthropometric measurements:

- Weight is measured using scales, salters like hanging scale, digital scale and baby scale
- Height/length is measured by infantometer or stadiometer, as applicable
- Mid-Upper-Arm Circumference (MUAC) by Shakir's MUAC Tape
- Occipito-frontal Circumference (OFC) measured by simple measuring tape.

This NRU is specially designed as child friendly with many cartoons, colorful pictures, toys etc. on the walls with good environmental temperature to allow full recovery as a whole and to assist to improve proper growth and development to these SAM children.

Severe Acute Malnutrition (SAM) as managed by the NRU:

Once any child is diagnosed as **SAM** (having weight for height/length Z score <-3Z, having bilateral pitting pedal edema or MUAC <115 mm among children 6 months to under 5 years old) are treated following a standard protocol (introduced first in 1999 by an Australian Nutrition Trainer) that was followed by WHO guidelines.

Later in 2003-2004 the protocol was updated by Professor Mike Golden UK pediatrician following an international training workshop in ICMH (Matuail) for the management of SAM patients. NRU had a well-organized nutrition team comprising of pediatric consultants, nutritionist, nurses and food assistant, coordinated by a nutrition coordinator, who was mainly responsible for implementation of this management protocol for SAM patients.

There was fixed one day weekly nutrition team meeting to discuss and to improve the services of its members in reducing the overall outcome in term of morbidity and mortality of SAM patients.

Nutrition Coordinator along with other Pediatric consultants looks after the clinical management following treatment protocol; Nutritionist used to look after feeding these children, daily weight monitoring, record keeping, monthly and yearly reporting, play therapy, nutrition education and disseminated a minute written by nutrition coordinator to all its members and SCF-UK. Food assistants were responsible for preparing and serving special diets like F-75, F-100, F-100D, ReSoMal and Khichuri accurately to the SAM patients by using a special kitchen in pediatric indoor department. These trends are still continuing in NRU of pediatric department of AWMCH.

Trends in NRU:

Regarding trends of SAM patients in NRU of AWMCH, there is decline day by day probably due to improvement in services delivery, different training programs, awareness of people in general and improvement of economic conditions of the people of the country .In early part of beginning, NRU had full 20 bed sometimes extra bed were needed to treat the SAM patients, all the expenses were bearded by the authority free of cost during not only in hospital but also after that next 6 months of the admission in NRU. The overall outcome in term of morbidity and mortality were about less than 5% as within acceptable limits of WHO. Many post-graduate medical students collected data from our NRU for their dissertation/thesises. Now-a-days, we observe about less than 10 SAM cases in our NRU.

Concluding Remarks:

Due to well reputation of AWMCH's NRU, undergraduate medical students and BSC nursing students from various institute used to visit this hospital for training purpose since last 1999 for clinical nutrition and dietetics. Thus, it also played a role for our nutrition coordinator in participating and developing national guidelines for the management of SAM patients in the country. Our respected Executive Director (E.D.) Dr Sheikh Mohiuddin is the key person for the whole activities of this special NRU of the pediatric department of AWMCH-who we remain grateful for assisting these poor and deprived children (SAM). Our contribution to NRU led the parents of recovered children referring others to bring several others parents showing gratitude and satisfaction on our treatment and management system of SAM children, very successfully.

Original Article

Status of Serum Magnesium & Copper Level in Bangladeshi Children and Adolescents with Type 1 Diabetes Mellitus and their Relationship with Glycemic Control

Shawana Haque[1], Rahat Bin Habib[2], Masuma Khan [3], Md. Mostaque Mahmud[4]

Abstract

In children and adolescents, type 1 diabetes mellitus (T1DM) is one of the most common endocrine and metabolic disorders. Changes in serum magnesium and copper levels may be linked to metabolic control and diabetic complications. We aimed to assess the serum magnesium & copper level in children & adolescents with T1DM and evaluate their relationship with glycemic control. The study included 80 type 1 diabetic children & adolescents with age range 1 to 18 years and 80 aged matched healthy controls who presented at the outpatient department of BIRDEM-2 General Hospital, Dhaka. Biochemical analyses of plasma glucose, serum magnesium , serum copper & HbA_{1c} levels were analyzed & compared statistically with each group & healthy controls. Serum magnesium level was significantly lower & serum copper level was significantly higher in patient with T1DM compared to control (p= < 0.001). Lower level of magnesium & higher level of copper was found in subjects with poor glycemic control compared to good glycemic control (p= < 0.001).This study showed that serum magnesium and copper level were altered in type 1 diabetic children & adolescents and associated with poor glycemic control. Alteration of serum magnesium & copper may lead to early development of long standing critical diabetic complications. It is recommended for clinicians to monitor these biochemical parameters routinely to prevent those complications.

Key words: Type 1 Diabetes Mellitus, Serum Magnesium , Serum Copper, Glycemic Control

Introduction:

Diabetes mellitus (DM), a chronic, endocrine- metabolic-clinical disease characterized by overt hyperglycemia due to absolute or relative deficiency of insulin, is currently a significant pandemic with increased morbidity and mortality. Type 1 diabetes mellitus (T1DM) is a disease caused by the autoimmune destruction of the insulin-producing beta cells of the pancreas[1,2].

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Diabetes mellitus is the most prevalent metabolic condition linked to magnesium insufficiency, with a prevalence of 25% to 39%[3]. Magnesium (Mg) is an essential cofactor of more than 300 enzymes including those essential in glycolysis, transcellular ion transport, neuromuscular transmission and synthesis of carbohydrates, proteins, lipid and nucleic acids. Various causes for low magnesium levels in diabetes are poor dietary intake of magnesium, osmotic diuresis, insulin insensitivity, usage of loop and thiazide diuretics that promote magnesium wasting, diabetic autonomic neuropathies and reduced tubular reabsorption due to insulin resistance[4].

Hypomagnesaemia has been associated with various long-term complications of diabetes including carotid wall thickeness, coronary artery disease, dyslipidemia, diabetic retinopathy, neuropathy, nephropathy, ischemic stroke, and foot ulcers[5,6]. Several researchers found that hypomagnesaemia occurred in 28.2% & 37.3% type 1 diabetic patient respectively with poor glycemic control[4,7]. Magnesium supplementation, either orally or

intravenously, increases magnesium levels and improves glycemic control in T1DM patients[8,9].

Copper (Cu) plays an important role in body metabolism as the regulator of various essential enzymes and transcription factors. It is important in the oxidant/antioxidant mechanism, whose imbalance leads to increased susceptibility to oxidative damage of tissues, and therefore to the pathogenesis of DM and diabetic complications[10,11]. Copper works as a prooxidant and may contribute in the generation of free radicals in metal-catalyzed reactions. Copper is an essential component of Copper/ Zinc superoxide dismutase (Cu/Zn SOD) enzyme which is involved in protecting the cells from free radical damage. Hyperglycemia increases free radical generation and reduces the effectiveness of antioxidant defense systems[12,13]. Imbalances in copper levels and the Cu/Zn ratio can disrupt the antioxidant defense system's equilibrium and increase the toxicity of metal-dependent free radicals. These associations may enhances the pathogenic processes that lead to diabetes complications[14]. Increased Cu may trigger prooxidant stress and weaken antioxidant defense that results progressive damage to the blood vessels, heart, kidneys, retina, and nerves [15]. According to some researchers glycated proteins bind transition metals like Cu and these glycocholates play key role in the etiology of peripheral vascular dysfunction and peripheral neuropathies in diabetic patients[16]. According to many studies, using a copper specific chelator can considerably minimize and prevent diabetes-related cardiac and renal complications[14,15,17].

In this study, we aimed to evaluate serum magnesium & copper level in children and adolescents with T1DM and their relationship with glycemic control.

Methods

From July 2016 to June 2017, a cross-sectional study was conducted on the department of Biochemistry and Molecular Biology in BIRDEM Academy, Dhaka. The Ethical Institutional Review Board (IRB) of the BIRDEM Academy granted approval to the research protocol. For this study 80 type 1 diabetic children & adolescents with age range 1 to 18 years were selected as cases & 80 age matched healthy controls were selected from the outpatient department of Changing diabetes in Children (CDiC), BIRDEM-2 General Hospital. All diabetic patients were administered with insulin.

After the study subjects were selected, the study's goals and objectives, as well as the protocol, risks, and benefits, were explained to their guardians. When their parents consented to participate, they signed an informed written consent form and filled out a systematic questionnaire for each patient. The study excluded participants under the age of one year and those above the age of eighteen, as well as those who had a chronic illness or were taking medication that could affect serum magnesium and copper levels. The participants' personal, medical, and familial histories were recorded thoroughly.

Data collection technique

Weight and height were measured (in kilogram and meter respectively) and body mass index (BMI) was calculated. Blood pressure readings, both systolic and diastolic were also recorded.

Under all aseptic precaution 5 ml blood sample was collected from study subjects after an overnight fasting of 8-10 hours. 4 ml of which was delivered in a plain test tube for estimation of fasting plasma glucose, serum magnesium, and copper, and the remaining 1 ml blood was delivered in an EDTA tube for estimation of HbA_{1c}.

Serum magnesium & serum copper were analyzed by Beckman Coulter AU-480 auto-analyzer & colorimetric method in Stat Fax 3300 semi-autoanalyzer respectively. Plasma glucose level was estimated by Enzymatic Glucose-Oxidase (GOD-PAP) method by using Biosystem BTS 350 analyzer. Glycemic control was estimated for each patient through HbA_{1c} which is assessed by Clover A_{1c} analyzer using HPLC method.

We used standard international criteria[18] to define "glycemic control".Subjects were separated into two groups based on HbA_{1c} levels: (i) participants with good glycemic control (normoglycemic group), defined as HbA_{1c} levels < 9%; and (ii) participants with poor glycemic control, defined as HbA_{1c} levels > 9%.

All data were collected, tabulated and statistically analyzed using software SPSS version 20. Quantitative data was expressed as mean ± SD and unpaired student's 't' test was done to see the level of significance. Qualitative data were expressed as frequency & percentage and chi-square test was done to obtain the level of significance. The p-value of <0.05 was considered statistically significant.

Results

Table I: General and biochemical parameters of the study population (n=160)

Variables	Case (n=80) Mean ± SD	Control (n=80) Mean ± SD	p- value
Gender			
Male	40 (50%)	39 (48.8%)	
Female	40 (50%)	41 (51.2%)	
Age of the respondent	14.9 ± 2.9	14.8 ± 2.9	> 0.05^{ns}
Age of onset during diagnosis (in year)	10.5 ± 3.6	-	-
Duration of diabetes (in year)	4.5 ± 2.7	-	
Weight of the respondent (in Kg)	50.5 ± 16.7	48.7 ± 13.5	> 0.05^{ns}
Height of the respondent (in cm)	150.8 ± 13.7	151.7 ± 12.2	
BMI of the respondent (kg/sqm)	21.5 ± 4.7	20.9 ± 3.9	
SBP of the respondent (mmHg)	101.0 ± 11.6	102.1 ± 10.9	
DBP of the respondent (mmHg)	68.2 ± 8.1	67.1 ± 7.9	
FPG (mmol/L)	9.2 ± 4.2	5.6 ± 0.1	< 0.001
HbA_{1c} (%)	9.2 ± 2.2	5.6 ± 0.1	

Data was expressed as mean ± SD and comparison between groups was done by Student's unpaired 't'test. n= number of subjects, p-value < 0.05 is significant, ns= not significant

Table-I showed that 50% of the cases were male and 50% were female, whereas 48.8% of controls were male and rests were female. There were no statistically significant differences in age, weight, height, BMI, systolic and diastolic blood pressure between case and controls. However, FPG and HbA_{1c} levels were found statistically significant between them.

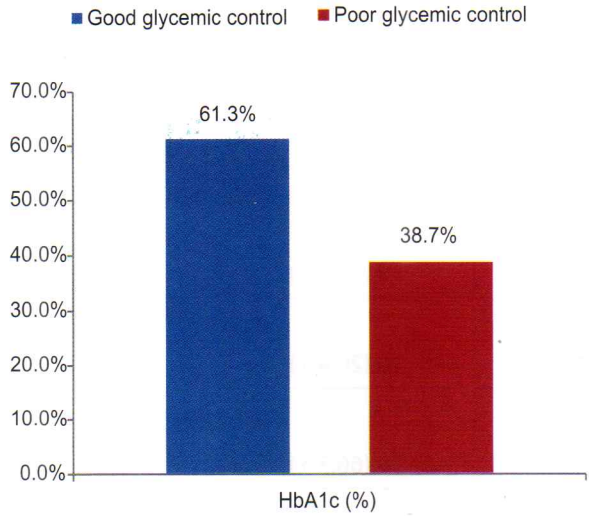

Figure-1
Among the total diabetic children & adolescents 61.3% had good glycemic control and 38.7% had poor glycemic control as shown in Figure-1.

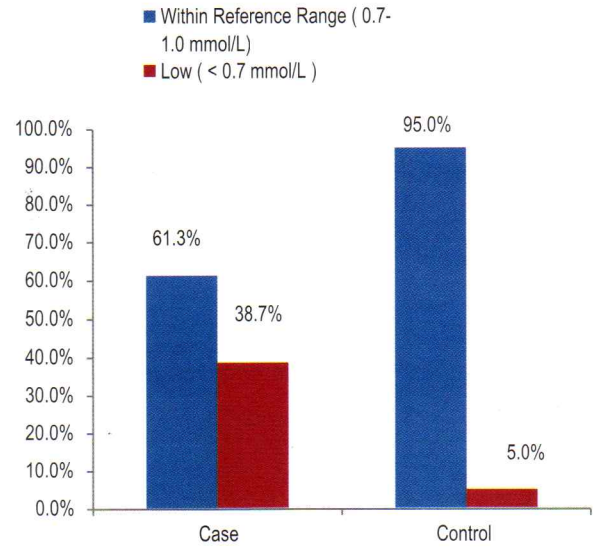

Figure-2
As indicated in Figure 2, among all 38.7% of the total participants in cases and 5.0 percent of controls had hypomagnesaemia.

Table-II: Comparison of serum magnesium & copper level in study population (n=160) and relationship of serum magnesium & copper level with glycemic status in cases (n=80)

Variable		Serum magnesium (mmol/L)	Serum copper (µg/dL)	p- value
	Case	0.7 ± 0.1	146.9 ± 21.6	< 0.001
	Control	0.8 ± 0.1	125.7 ± 17.1	
	In good glycemic control (HbA1c < 9)	0.8 ± 0.1	131.8 ± 18.8	
	In poor glycemic control (HbA1c ≥ 9%)	0.6 ± 0.1	155.4 ± 25.0	

Data was expressed as mean ± SD and comparison between groups was done by Student's unpaired't' test. n= number of subjects, p-value < 0.05 is significant, ns= not significant

In comparison to controls, patients with T1DM had significantly lower serum magnesium levels. In study subjects with poor glycemic control, the serum magnesium level was significantly lower than in those with good glycemic control ($p < 0.001$), as indicated in table II.

Table II also showed that cases had significantly higher serum copper levels than controls. Comparing patients with poor glyecemic control to those with good glyecemic control, the serum copper level was significantly higher in the poor glyecemic control group ($p < 0.001$).

Table III showed that serum magnesium level was significantly lower & serum copper level was significantly higher in patients who have duration of diabetes mellitus more than 5 years compared to those who have duration of diabetes mellitus less than that.

Table –III: Relationship of duration of DM with serum magnesium & copper level in cases (n=80)

Variables		Relationship with duration of DM		p-value
		< 5 years	≥ 5 years	
Serum magnesium	Low (0.7 mmol/L)	12 (38.7%)	19 (61.3%)	
	Within reference range (0.7-1.0 mmol/L)	39 (79.6%)	10 (20.4%)	< 0.001
Serum copper	High (> 165 µg/dL)	9 (33.3%)	18 (66.7%)	
	Within reference range (83-165 µg/dL)	42 (79.2%)	11(20.8%)	

Statistical analysis was done by Chi-square test to compare among the groups. n= number of the subjects, p-value < 0.05 is significant, ns= not significant

Discussion

In our study we measured serum magnesium & copper level, clinical and biochemical parameters in children and adolescents with T1DM. Inadequate metabolic control can affect the concentrations of magnesium, developing hypomagnesaemia, which may be directly related with some micro and macrovascular complications observed in diabetes, as cardiovascular disease, retinopathy and neuropathy[19].

We found 38.7% of diabetic patient had hypo-magnesaemia which is significantly lower compared to control. Seyoum et al.[20] found a higher percentage of hypomagnesaemia (65%) in their study. Contrary to our result, Zargar et al.[21], did not find any significant alteration in serum magnesium level in type 1 diabetes mellitus.

Elevated copper level was found in cases compared to control. This finding is in line with that of other researchers[22-24]. Whereas, some researchers [21,25,26] found no significant changes of copper in type 1 diabetic patients. Inconsistent to our result, copper level was found low in the study of Maher and Shaaban [27].

Elevated copper levels in patients with diabetes mellitus may be attributed to hyperglycaemia that may stimulate glycation and release of copper ions which accelerates the oxidative stress and as a result Advanced Glycation End products (AGE) are formed that are involved in the pathogenesis of diabetic complications[28]. Copper in its free form is a potent cytotoxic element and generate reactive oxygen species (ROS). ROS formation may lead to peroxidation of membrane lipid, direct protein oxidation and cleavage of DNA & RNA molecules which ultimately leads to to cell death [29].

In addition, when comparing patients with poor glycemic control to those with good glycemic control, we found that serum magnesium was considerably lower & serum copper level was significantly higher ($p < 0.001$) in those with poor glycemic control.. In poor glycemic control uncontrolled hyperglycemia and glycosuria may increase magnesium excretion through osmostic diuresis. This result is similar with the study of many researchers[4,7,30,31]. Inconsistent with our result, some researchers did not observe any relationship between serum magnesium and glycemic status[22,32,33]. In this study serum copper level was found significantly higher ($p < 0.001$) in participants with poor glycemic control. This findings correlates with the findings of Salmonowicz et al.,[22] Viktorinova et al.,[23]. Inconsistent to our result, Baloch et al.,[24] found that glycemic control did not affect the serum copper level.

This difference could be attributed to the difference in study populations and degree of diabetic control among them, also to the different methods of evaluating serum magnesium , copper and HbA_{1c}.

In our study we found serum magnesium was low with patient having duration of DM ≥ 5 years. This result is consistent with Shahbah et al.[4] who found that duration of diabetes were more in participants with hypomagnesaemia. Serum copper level was significantly higher in participants having diabetes > 5 years of duration. In contrary of our result Maher & Shabaan[27] did not found any significant relation with copper & duration of DM.

Conclusion

Present study demonstrated a significantly lower serum magnesium & elevated level of copper in T1DM cases and a low serum magnesium level & high copper level was found to have association with poor glycemic control. So, it is advocated that proper glycemic control, close monitoring, supplementation of magnesium, chelation of copper may be beneficial for preventing long term oxidative injury and diabetic complications.

Conflict of interest: The authors declare no conflict of interest.

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Original Article

Appropriateness of Routine Cross Matching and Blood Transfusion Practice in Caesarean Section for Low Risk Postpartum Haemorrhage Pregnancies at Ad-din Women's Medical College Hospital, Moghbazar, Dhaka

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Abstract:

Haemorrhage from obstetric cause is the most common cause of maternal mortality in the developing world. Prevention of mortality from haemorrhage will necessarily involve prompt blood transfusion among other life saving measures. Routine cross matching of blood preparation for elective caesarean section cause expensive waste of resources and increased work load of blood bank staffs.

Objective: To evaluate appropriateness of the blood ordering practice, transfusion and routine cross matching for elective caesarean section in low risk postpartum haemorrhage.

Method: This 6 month long prospective designed observational study was conducted among all the 108 pregnant women having normal hemostasis profile who underwent caesarean section (Emergency and Elective) at the department of Obstetric and Gynecology (OBGYN) of Ad-din Women's Medical College Hospital, Dhaka, Bangladesh. Females with abnormal bleeding profile or on anti-coagulant therapy were excluded. Other excluding criteria are gestational age <28 weeks, grand multipara, multiple pregnancies, history of previous 3 or more CS, fetal birth weight more than 4 kg, high risk PPH causes and patient with co-morbidities. To waive seasonal biasness the study was conducted from July through December 2019.

Result: In our study all 108 patients who underwent caesarean section for low risk PPH pregnancies had done routine cross matching before operation (elective or emergency). Among them only 5 patients needed blood transfusion. So incidence of PPH needed blood transfusion was 4.6%.Only one patient needed 2 unit of PRC .Among the 5 patients needed transfusion ,4 underwent emergency and 1 underwent elective caesarean section.

Transfusion utilization indices including cross match to transfusion ratio (C/T), Transfusion probability (%T), and tansfusion index (Ti) were 18,4.6% and 0.05; respectively. Total cost of cross matching was 81000 taka, but the actual transmission cost was 1320 taka.

Conclusion: Routine 1 unit of cross matched PRC for low risk PPH caesarean section was seemingly shown inappropriate and over ordering. It led to unnecessary expenses and time consuming.

Keyword: Caesarean Section (CS), blood typing, blood transfusion, cross-matching.

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Introduction:

Globally postpartum harmorrhage (PPH) is a leading cause of maternal mortality.[2] The global prevalence of PPH is 6 %.[1] And highest burden is experienced in low income countries.[3] Prevention of mortality from haemorrhage will necessarily involve Prompt blood transfusion among other life saving measures. Risk factors of PPH are abnormal placentation (placenta previa, abruptio placenta, placenta accreta),uterine over distension (Multiple pregnancies, polyhydramnios, macrosomia), grand multiparity, having history of PPH, Prolong labour, pregnancy with uterine fibroid ,receiving

tocolytic drugs, delivery by caesarean section and severe anaemia[2,3] although the safety of caesarean section has improved, it is still associated with greater rates of maternal morbidity than vaginal delivery.[4,5] CS delivery is associated with severe maternal morbidity including including obstetric haemorrhage, hysterectomy, anaemia, blood transfusion and infection.[6,7] Because caesarean section itself is one of the risk factor of PPH. It is possible that pregnancies undergoing caesarean section tend to have greater amount of intra operative blood loss and have higher chance to receive blood transfusion even in the cases who have no other risk factor.[8,9] Decision concerning blood transfusion in the surgical cases depends on many factors; the type of operation ,the extent and speed of blood loss and the presence of concomitant clinical condition (age of the patient, heart disease and respiratory disorders).[10,11] For all low risk PPH pregnancies undergoing caesarean section in department of obstetrics and gynaecology, one unit of PRBC have been routinely preoperative cross matched. From the observation, our routine is not only different from the standard but also possibly unnecessary and over ordered.

In addition, because of the limitation of blood components in blood bank, all blood components should be preserved for the necessary call that need blood transfusion. Therefore appropriateness of blood preparation for each surgery is important for saving time, expenses and workload and also decreases in transmission of infection for the personals during blood preparation. Caesarean section has been identified as a common indication for blood transfusion in obstetric practice and its performance is often delayed by non availability of blood in our centre. according to all this reason, this study is to evaluate the appropriateness of the blood ordering practice and transfusion for caesarean section in low risk PPH cases.

Materials and Methods:

Study Type: Observational

Study Design: Prospective

Study Design: 6 months (to waive out seasonal bias, it was conducted from January to June 2021)

Study Place: Department of Obstetrics and Gynaecology (OBG) of Ad-din Women's Medical College Hospital, Dhaka ,Bangladesh.

Study Subjects: Pregnant women who underwent CS; female with abnormal bleeding profile or anti coagulant therapy were excluded, other excluding criteria are gestational age <28 weeks, grand multipara, multiple pregnancies, H/O previous 3 or more CS, fetal birth weight >4 kg, high risk PPH cases and patients with co-morbidities.

Sampling and Design: Non randomized purposive sampling (All cases were studied)

Sample size: 108 pregnant women preselected for CS.

Study parameter:

- Females with normal haemostasis profile were included in the study, while those with abnormal bleeding profile or on anticoagulant therapy were excluded.
- The parameter included age of woman, parity, gestational age, type of the CS whether elective or emergency and indication of CS.
- Pre operative Hb was estimated and blood group was checked. blood units arranged and cross matched pre operatively, units of blood transfused intra – operatively or post operatively were also counted as well.
- Blood arranged refers to blood grouping, cross matching and hold order to blood bank. Post operative Hb were done at 48 hours post CS.
- Transfusion utilization indices including crossmatch to transfusion ratio (C/T ratio), Transfusion probability percentage (%T), and transfusion index (Ti) were calculated (figure 1). C/T ratio less than 2%, T more than 30%, and Ti more than 0.5 and appropriate blood preparation. (10 to 12)
- **Cross match to transfusion rate (c/t ratio)=**
$$\frac{Number\ of\ units\ crossmatch}{Number\ of\ units\ transformed}$$
- **Transfusion Probability (%T) =**
$$\frac{Number\ of\ patients\ transfered \times 100}{Number\ of\ patients\ crossmatch}$$
- **Transfusion index (Ti)=**
$$\frac{Number\ of\ units\ transfered}{Number\ of\ patients\ crossmatch}$$

Data Management:

The collected data, utilizing a preselected open and closed ended questionnaire, were entered into an IBM PC using the statistical software package 'SPSS-V.22' (Statistical program for social sciences)

Analysis Plan:

All the discrete values were analyzed using proportional statistics, like, Chi-Sq tests, while the continuous variables where analyzed using t-test / correlations as and whenever deemed necessary.

Results:

Mean age of the women included in the study was 26.5+/-6.27 years ranging from 18 to 35 years. 64.8% cases were between para 1-3. 75.9% cases were at term pregnancy (37-40 weeks).

Table -I

Age Distribution of CS (N=108)

Age	Frequency	Percent
18-25 years	55	50.59
26a-35 years	46	42.6
>35 years	5	4.6
Total	108	100

Table I shows that majority (50.9%) of the patients were between age 18-25 years.

Among the indication of CS ,fetal distress was the leading indication for CS, accounting for about 22.2%.

Among all 44.4% women underwent emergency CS, whereas 54.6% underwent elective CS. Most frequent blood group to be found was B positive (32.4%) followed by O positive(32.4%),A positive(24.1%),AB positive (4.6%),A negative(0.9%).

Table II

Indication of CS (N=108)

Indication of CS	Frequency	Percentage
Foetal Distress	24	22.2
Previous CS 1	15	13.8
CPD (Cephalo- pelvic disproportion)	12	11
Previous CS-2	11	10.1
CDMR (Caesarean Delivery on Maternal Request)	8	7.4

The average preoperative haemoglobin was 12.23+/-1.13 gm/dl ranging from 9.6 gm/dl to 15.6 gm/dl. The average postoperative haemoglobin was 10.74+/-1.49 gm/dl. In majority (34%) cases, drop in haemoglobin was <0.5gm/dl and maximum Hb% drop were 0.6-1 gm/dl and >2 gm/dl in 6 cases each. Average drop in haemoglobin at emergency surgery was 1.58+/-0.96 gm/dl whereas at elective surgery it was 1.36+/-0.96 gm/dl.

While drop in haemoglobin was minimum as less as <0.5% gm/dl in majority (34%) cases, the maximum drop of 0.6-1 gm/dl was and >2 gm/dl in 6 cases each.

Table II shows that among the indication of CS, fetal distress was the leading indication for CS, accounting for about 22.2%.

Table III

Post-operative Hb conc among post-operative patients.

Hb (Post Operative)	Frequency	Percentage
<8 g/dL	0	0
9-11 g/dL	21	19.4
12-13 g/dL	85	78.7
>13 g/dL	2	1.8

Table III shows that preoperative Hb was 9-11gm/dl in 19.4% cases,12-13 gm/dl in 78.7% cases and >13 gm/dl 1.8% of cases.

Table IV

Pre operative Blood Transfusion.

Units of blood transfused	Frequency	percentage
No	102	94.4
1	5	4.6
2	1	0.9
>2	0	0

Table IV : shows that 102 cases (94.4 %) required no blood transfusion ,5 cases (4.6%) required one unit of blood, 1 case (0.9%) required 2 unit of blood transfusion.

Table-V

Indication of CS requiring blood transfusion

Indication	Number	percentage
Emergency	4	80%
Elective	1	20%

Table V shows out 5 patients requiring transfusion 4 (80%) needed in Emergency CS, and 1 (20%) needed in elective CS.

Table VI

Post operative Hb drop.

Post-operative Hb drop	Frequency	Percentage
<0.5	34	31.4
0.6-1	13	12
1.1-1.5	10	9.2
1.6-2	6	5.5
>2	6	5.5

Table VI shows that post operative Hb drop was <0.5 in 34 cases (31.4%), 0.6-1 in 13 cases (12%),1.1-1.5 in 10 cases (9.2%),1.6-2 in 6 cases (5.5%) and >2 in 6 cases (5.5%).

Transfusion utilization indices were calculated for evaluation of the appropriateness of routinize cross-match in the cesarean section for low-risk PPH. Crossmatch to transfusion ratio (C/T Ratio)

Transfusion probability (%T) and transfusion index (T1) were 18,4.6 and 0.05, respectively as shown in the table.

As all 108 patients did mandatory cross-matching before undergoing the caesarian section (elective or emergency). At present the cost of cross-matching per unit is taka 750. to sum up, the total cost of 108 units of the cross-matched

PRC in the study was 81000 taka but the actual cost of transfusion was only 5820 taka. Surprisingly the total cost of routinely cross-matching was 14 times greater than the actual cost of transfusion.

Table VII shows Transfusion utilization indices including cross match to transfusion ratio (C/T), Transfusion probability (%T), and transfusion index (Ti) were 18,4.6% and 0.05; respectively

Table VII

Transfusion utilization indices

Transfusion utilization indies	Calculated Data	References for appropriate preparation
Crossmatch to Transfusion	18	<2
Ratio (C/T Ratio)		
Transfusion Probability (%T)	4.6%	>30%
Transfusion Index (Ti)	0.05	>0.5

Table VIII

Cost of each blood preparation

Blood preparation	Cost/Case (Taka)	Total Cost for 5 cases, 6 units (Taka)
Blood transfusion	970	5820

Table VIII Shows total cost of 6 units of blood transfusion was 5820.

Table IX

Cost of Blood transfusion

Cross matching	Cost/case (Taka)	Total cost for 108 cases (Taka)
1 unit PRC	750	81000

Table IX shows total Cost of 108 cross matching is 81000 taka.

Discussion:

In our study all 108 patients who underwent caesarean section for low risk PPH pregnancies had done routine cross matching before operation (elective or emergency). Among them only 5 patients needed blood transfusion. So incidence of PPH needed blood transfusion was 4.6%. Only one patient needed 2 unit of PRC. Among the 5 patients needed transfusion, 4 underwent emergency and 1 underwent elective caesarean section.

Transfusion utilization indices including cross match to transfusion ratio (C/T), Transfusion probability (%T), and transfusion index (Ti) were 18,4.6% and 0.05; respectively.

If we compare the results of our study with the standard references.

Routine cross match PRC for caesarean section in low risk PPH was seemingly inappropriate and over ordering. These results were compatible with the results of the previous studies.

In the previous studies there were various transfusion rates reported. Although improvement in surgical techniques could decrease blood loss and blood transfusion at the time of caesarean section. Requirement of blood transfusion was still significant ,specially in high risk cases.[13] From total 1056 deliveries

,327 pregnancies (31%) underwent caesarean section. While total of 654 units of blood were reserved, only 89 units (13.6%) were transfused. Majority of the patients did not need blood transfusion.81% of those were transfused in emergency caesarean section. There was no calculated C/T ratio for proper use of cross matched reported.[14] Comparing to the present study ,it reported higher blood transfusion rate.

The participants that were all caesarean section cases without classifying as low or high risk PPH pregnancies might be the reason. It still showed that most of the patients did not need blood transfusion.

The retro-spective study in Thailand evaluating blood transfusion rate in all operation showed that transfusion rate for 478 caesarean section cases was 3.3%. Caesarean section seemed to loss less blood than other operations where as over cross matching was ordered.[15] Their results were compatible with ours. From 23,486 women underwent caesarean section in the prospective observational study in 19 universities, transfusion rate was 3.2 % in primary caesarean section while there was 2.2% in repeated caesarean section[16].Moreover transfusion rate declined significantly from 22% in 1976 to 4 and 5 % in 1996 and 2006,respectively because of improvement in surgical technique. Most of patients receiving blood transfusion were high risk for PPH pregnancies.[13].Another study in 2286 women in Thailand informed that C/T ratio in caesarean section was 5.7.The incidence of blood transfusion was only 2.6% of the 2170 patients, who were not cross matched [17].The results including low transfusion rate, high C/T ratio and cost saving from decrease in routine cross match were compatible with these in our study.

Although the previous studies reported retrospective data about transfusion rate in all caesarean section causes without determining the risk of PPH or classifying patients in specific groups, such as elective or emergency cases.[18-20] The results were still similar. Firstly blood transfusion rate was quite low because of improvement of surgical techniques, secondly blood transfusion was given mostly in high risk PPH cases. From this study, we found low incidence of PPH and transfusion rate. Additionally the total cost of routine cross matching was many times greater than the actual cost of transfusion with these reason, the routine 1 unit PRC in our department might be changed for only tying and screening without cross matching .The limitation of the study was a small sample size. For further research the appropriateness of blood preparation in high risk PPH should be studied.

Conclusion:

Routine 1 unit of cross matched PRC for low risk PPH caesarean section was seemingly shown inappropriate and over ordering. It led to unnecessary expenses and time consuming.

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Original Article

Prevalence of ABO and Rh Blood groups and their combinations among the blood donors attending the Transfusion Medicine Department of TMC and RCH, Bogura

Nahida Anwar Poly[1], Shuvra Podder[2], Md. Abdullah- Al-Masud[3], Brindabon Biswas[4], M A Gofur Mondol[5]

Abstract:

Background: The ABO blood group was the first human blood group system discovered by Landsteiner in 1901 and Rhesus group in 1940. The second most important type of blood group Rhesus system was discovered in 1940. These fundamental discoveries played a vital role in development of transfusion medicine. Frequencies of these blood groups vary from irrespective of their ethnic origin. There are many blood group systems on the basis of different blood group antigens but mainly ABO and rhesus (D) system are important in clinical practice. ABO system consists of four main groups: A, B, AB and O which are determined on the basis of presence or absence of A and B antigens. In rhesus (D) system, blood groups are Rh-positive or Rh-negative on the basis of presence or absence of Rhesus (D) antigens on red cell surface[5].

Objectives: The aim of this study was to examine the distribution of these two groups and their combinations among the blood donors attended RCH, Bogura in relation to their age & sex.

Methods and Materials: This observational type of cross sectional study was conducted in the dept. of Transfusion Medicine using 6 months data (January, 2021- July, 2021) on the donors attending the Dept. of Transfusion Medicine of TMC & RCH. Records of 1,963 Voluntary blood donors were reviewed. Prior to donating blood the donors were assessed for blood donating criteria. Only donors who satisfied these criteria were recruited.

Results: Nineteen hundred sixty three (1,963) blood donors were included in this study. The donor had a mean age of 21±5.7 years and were mainly male (93.89%). The distribution of ABO blood group was; B (33.88%); O (30.92%); A (26.69%) and AB (8.50%). The proportions of Rhesus (D) positive and Rhesus (D) negative were 97.30% and 2.70% respectively. A significantly higher proportion of males were as a donor and Rhesus (D) negative than females (2.70% vs 0.00%). No significant relationship was found between age and ABO blood group distribution.

Conclusion: the sequence of ABO distribution among the blood donors who are more likely to boost blood stocks in the region. This may make the transfusion services to take necessary inventory for people who need the resource for their ailment.

Keywords: ABO blood group, Rhesus (D) Blood group, Blood donors.

Introduction:

Until the discovery of ABO blood groups by Karl Landsteiner in 1901, most of the transfusion trial failed with no significant explanation. After this several blood groups such as P and MNS blood groups were discovered[1] but yet the doctors were facing difficulties to perform transfusion safely. In 1940, Landsteiner and Weiner discovered the second most important blood group named Rh blood group which helped to transfuse blood safely[2]. The importance of Landsteiner's discovery lies firstly in the transfusion of blood amongst different populations irrespective of their ethnic origin, Secondly, organ transplantation[3] and finally the development of legal medicine and anthropology[4].

There are many blood group systems on the basis of different blood group antigens but mainly ABO and rhesus (D) system are important in clinical practice. ABO system consists of four main groups A, B, AB and O which are determined on the basis of presence or absence of A and B antigens. In rhesus (D) system, blood groups are

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Rh-positive or Rh-negative on the basis of presence or absence of Rhesus (D) antigens on red cell surface[5].

Frequencies of ABO & Rh Blood groups vary throughout the world even in different region of the each country with ethnicity, geographic area, race, population migration, natural selection and genetic phenomenon. In a study among the voluntary donors, the distribution of ABO blood group was such; blood group B (31.65%); O (29.60%), A (25.83%) and AB (12.92%), Rhesus (D) positive (95.89%) and Rhesus (D) negative (4.11%)[6]. In another study among donors, the distribution of blood groups was B>O>A>AB, in Rh positive groups donors and O>B>A>AB among Rh negative donors. Blood group B was more common among the males (37.42%) while O was predominant among female donors (33.83 %)[7].

Method and Materials:

This observational type of cross sectional study was conducted in the dept. of Transfusion Medicine using 6 months data (January, 2021- July, 2021) on the donors attending the Dept. of Transfusion Medicine of TMC & RCH. Records of 1,963 Voluntary blood donors were reviewed. Prior to donating blood the donors were assessed for blood donating criteria. Only donors who satisfied these criteria were recruited. Incomplete donor equipment forms were excluded.

Blood grouping ABO and Rhesus was done by double slide method (Tiles method) using commercially available standard anti-sera validated at National Safe Blood Transfusion Services. For ABO groups forward (cell grouping) and reverse grouping (serum grouping) methods were used. Donor's age, sex, dates of donation ABO blood groups with Rh factors were recorded in register book. Data were analyzed and expressed in percentage.

Results:

This study includes 1963 donors of which male donors were 1843 (93.89%) and female donors were only 120 (6.11%). Donors were of age between18 to 60 years. Majority of the donors were of age between 18-27 years (Table I)

Table I: Distribution of donors (Male and Female) according to their age

Age group	Male (N & %)	Female (N & %)	Total (N & %)
18-27 year	1265(64.44)	63(3.20)	1328(67.65)
28-37 year	463(23.58)	42(2.13)	505(25.72)
38-47 year	95(4.83)	14(0.71)	109(5.55)
48-60 year	20(1.01)	01(0.05)	21(1.06)
Total	1843(93.89)	120(06.11)	1963(100)

This study shows that in ABO blood group system, B blood group was most prevalent (33.88%) among them male donors were 31.74% and female donor only 2.14%. Next most prevalent group was O (30.92%) followed by A (29.69%) and AB (8.51%). In Rh blood group system, majority of donors was Rh (D) positive (97.30%), among them male donors were 91.19% and female donor only 6.11%), among female donors, none were Rh (D)negative (Table II). Among female donors, O blood was prevalent (2.19%) followed by B group (2.14%).

Table II : Distribution of donors (Male and Female) according to their ABO & Rh blood Group

ABO Blood Group	Male (N & %)	Female (N & %)	Total (N & %)
A	499(25.42)	25(1.27)	524 (26.69)
B	623(31.74)	42(2.14)	665(33.88)
AB	157 (8.00)	10(0.51)	167(8.51)
O	564(28.73)	43(2.19)	607(30.92)
Total	1843 (93.89)	120 (6.11)	1963 (100)
Rh(D) Blood Group			
Rh(D)pos	1790 (91.19)	120 (6.11)	1910 (97.30)
Rh(D)neg	53 (2.70)	--	53 (2.70)

Table III reveals that majority of blood donors was B +ve 645(32.86%) followed by O+ve 588(29.95%), then A+ve 514(26.18%) and AB+ve 163(8.30%). Among Rh-ve donors, B-ve 20(1.02%), O-ve 19(0.97%), A-ve 10(0.51%), AB-ve 4(0.20%).

Table III: Distribution of Rhesus (D) groups in relation to ABO blood group donors:

Blood Group	Rh Positive (N & %)	Negative Rh (N &%)	Total (N & %)
A	514(26.18)	10(0.51)	524(26.69)
B	645(32.86)	20(1.02)	665(33.88)
O	588(29.95)	19(0.97)	607(30.92)
AB	163(08.30)	4(00.20)	167(08.50)
Total	1910(97.30)	53(2.70)	1963(100)

Discussion:

In this study, the dominance of male 1843(93.89%) over female 120 (6.11%) in blood donation exercise can be attributed to the fact that there is a general belief that men are healthier than women and they are more suitable for blood donation. Women in menstruating age

group lose blood every month and in obstetrical factors including pregnancy, breast feeding and nutritional deficiency are the most common cause of donor rejection. Other causes in Bangladesh, like cultural habits, lack of motivation and fear of blood donation have been the reasons why female donors are very few.[1-9]

The findings of this study show that the blood group B (33.88%) and O (30.92%) occurs most frequently among the donors, then A (26.69%) and AB (8.51%) i.e. B>O>A>AB. A similar study was done in Dhaka Medical College among general people and found B group (39.8%), O group (27.6%), A group (23.5%) and AB group (9.2%)[10]. These results were a little bit higher in groups B,O and AB but less in A group. This study is similar to the first study in Bangladesh done by Rahman M[11] in 1975 where blood group B was found most predominant among the population, and the frequency of B, O, A and AB groups were as 35.2%, 33.97%, 22.44% and 8.39 respectively i.e. B>O>A>AB. Karim S et al in their study found similar prevalence of ABO blood group distribution pattern of B, O, A and AB were 37.50%, 27.60%, 21.80% and 9.20% respectively[12].

In contrast, the blood group A is most prevalent group in Gaza[8]. In Iran, the blood group O had the high frequency (33.77%)[9]. In another study, the blood group O is the most prevalent group in Egypt[13]. Likewise blood group A in Russian Federation[14] . Our study showed that the blood group B positive was most prevalent (31.74%) in male and blood group O (2.19%) in female. where as a study done in our country shows, the most prevalent blood group B positive in both male and female[6]. In all the studies cited and including our study, blood group AB is the least distributed among the population of the world[1-14]. Our study reveals that Rhesus (D) negative has the lowest distribution among the donors which is similar to other studies conducted [5,9,10,13,14]. About 5-11 % of donors all over the world are detected as Rhesus (D) negative except in Britain and USA, where the distribution of Rhesus (D) negative is 15 and 17 % respectively[15].

In this study, in positive and Negative cases, B>O>A>AB. These results are concordant with the study of Tashmim FD et al, where the distribution of blood groups was B>O>A>AB, in Rh positive groups donors but not similar O>B>A>AB among Rh negative donors. Blood group B was more common among the males (37.42%) while O was predominant among female donors (33.83 %)[7].

In Rhesus System, our study shows prevalence of Rh positive was 97.30% and Rh negative was 2.70%, which was similar to other studies carried out in Bangladesh by Quader MA[5], Rahman M[11], Afrose S[16] and Hossain MM[17]. Our donor population showed Rh negativity of 2.70% as compared to 17% in Britain. This suggests that the expected frequency of Rh iso-immunization would be lower in our population than that encountered in the Britain population[18].

Conclusion:

The ABO and Rh blood group system is not only important in Transfusion medicine services, but also important to create a social awareness about self-blood grouping and voluntary blood donation among the population of a country. Knowledge of frequencies the distribution of ABO and Rhesus (D) blood groups is an important element in determining the direction of recruitment of voluntary blood donors as required in each region and also very useful in blood banking and transfusion service policies that could contribute significantly to the National Health System.

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Original Article

Factors Associated with Pregnancy Induced Hypertension with Maternal and Fetal Outcome in a Tertiary Care Hospital, Dhaka

Rahima Khatun[1], Tania Noor[2] , Shahnaz Akhtar[3], Nasrin Sultana[4], Kazi Morjina Begum[5], Banika Biswas[6], Nilufar Jahan[7]

ABSTRACT

Background: Pregnancy induced hypertension is a common medical disorder occurring during pregnancy which is responsible for maternal and fetal mortality and morbidity. Though the condition is on decline, still stands a public health problem. The aims of the study were to know the clinical presentation among PIH patients and to find out maternal and fetal outcome.

Methods: All patients beyond 20 weeks of pregnancy with pregnancy induced hypertension admitted in Ad-din women's Medical College and Hospital during the six months study period were enrolled in the study. The objective of the study was to analyze the cases of gestational hypertension, pre-eclampsia and eclampsia and their maternal and fetal outcome in terms of mode of delivery and complications. Perinatal outcome in relation to birth weight, APGAR and complications was also studied. The mean and standard deviation for socio-demographic variables, risk factors and symptomatology variables were analyzed.

Results: A total of 153 pregnant women with PIH were enrolled in this study with inclusion-exclusion criteria, out of which gestational hypertension were 15 (9.8),severe pre-eclampsia 92(60.13%), Pre-eclampsia 13(8.49%) and eclampsia 33 (21.56%). Commonest maternal complication was eclampsia 33 (21.56%), HELLP syndrome 10 (6.5%) and abruptio placenta 16(10.45%).Total number of preterm deliveries were 111 (72.9%), IUGR 38 (24.8%), LBW 39 (25.5%), IUD 30(19.6%). Perinatal mortality was seen in 15 (9.8%).

Conclusions: Pregnancy induced hypertension is a common medical disorder during pregnancy. Though the incidence of pre-eclampsia and eclampsia is on the decline, still it remains the major contributor to poor maternal and fetal outcome.

Keywords: Gestational hypertension, Pre-eclampsia, Eclampsia, Maternal outcome, fetal outcome.

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Introduction

Hypertension is one of the common medical emergency of pregnancy and contributes significantly to maternal and perinatal morbidity and mortality. Hypertension is a sign of an underlying pathology which may be pre-existing or appears for the first time during pregnancy. Pre-eclampsia is a multi system disorder of unknown etiology characterized by development of hypertension to the extent of 140/90 mm of Hg or more with proteinuria after the 20th week in a previously normotensive and non- proteinuric woman. The identification of clinical entity and effective management play a significant role in outcome of pregnancy, both for the mother and the baby[1]. Hypertensive disorders of pregnancy affect 6-8% of all pregnancies, with wide variation as per different geographical areas[2].

World Health Organization estimates that at least one woman dies every seven minutes from complications of hypertensive disorders of pregnancy[3]. Pregnancies complicated with hypertensive disorders are associated with increased risk of adverse fetal, neonatal and maternal outcome including preterm birth, intrauterine growth retardation (IUGR), perinatal death, ante partum haemorrhage, postpartum haemorrhage and maternal death[4, 5].

Though maternal mortality has been reduced significantly in the advanced countries, it still remains high in the developing world .The perinatal mortality still remains very high even in the developed countries (7-10%). In the developing countries, the perinatal mortality remains to the extent of about 20%, about 50% of which being stillborn[1].

The management of gestational hypertension, pre-eclampsia and eclampsia has gone through many changes and has achieved good results with the introduction of newer anti-hypertensives, different regimes of anticonvulsants and also increased awareness among the population[6].

The present study was conducted to find out associated factor for pregnancy induced hypertension and its maternal and fetal outcome.

METHODS

Prospective analytical study was done at Department of Obstetrics and Gynaecology, Ad-din women's Medical College and Hospital, between January 2021 to June 2021.

Inclusion criteria

Patients beyond 20 weeks of pregnancy with pregnancy induced hypertension.

Exclusion criteria

Chronic hypertension, chronic renal disease, coarctation of aorta, endocrine disorders (diabetes mellitus, pheochromocytoma, thyrotoxicosis), connective tissue diseases (lupus erythematosus) and patient refusal.

A total number of 153 cases of pregnancy induced hypertension (gestational hypertension, pre-eclampsia and eclampsia) admitted to Ad-din Women's Medical College and Hospital during the study period were enrolled after obtaining written informed consent. All patients were subjected to detailed history taking, general physical examination, thorough systemic and obstetric examination. Blood pressure was measured using the auscultatory method with a standard caliberated, validated instrument. An appropriate sized cuff was used to ensure accuracy, korottkoff sound 5 was taken to measure diastolic BP. The necessary investigations were sent. The patients were categorized into Gestational hypertension, pre-eclampsia and eclampsia. Antihypertensive, anticonvulsants if necessary, were started and obstetric management was done according to the standard protocol[6].

In present study Hypertension in pregnancy is defined as blood pressure ≥140/90 mm Hg. When hypertension in pregnancy accompanied by proteinuria (urinary excretion of 300 mg protein in a 24 hour specimen $^{+}$using random urine dipstick evaluation) it is known as preeclampsia. The diagnosis of preeclampsia in absence of proteinuria highly suggestive when hypertension is accompanied by headache, blurring of vision, abdominal pain or low platelet count and elevated liver enzyme either alone or in combination. Eclampsia is defined as occurrence of new onset grand mal seizure in women with preeclampsia that cannot be attributed to other causes[4].

All the sociodemographic variables were noted and the maternal outcomes were analyzed in all the cases in terms BMI, mode of delivery, maternal complications like HELLP syndrome, acute renal failure, postpartum hemorrhage, abruptio placenta, pulmonary edema and cerebral hemorrhage. Intrapartum and postpartum complications were also observed. Neonatal assessment was done by APGAR score at one minute and 5 minutes. Birth weights, IUD, IUGR, stillbirth and other complications were noted. This information was subjected to computer analysis using SPSS (statistical package for social science) system. The mean and standard deviation for Socio demographic, risk factors and symptomatology variables were analyzed.

Result:

A total number of 8024 deliveries were conducted during this period. Out of these 153 women had pregnancy induced hypertension and participated in this study. We noted the following observation in our study.

Table - I

Distribution of the socio-demographic factors (n=153)

Factor	No of cases (n)	Percentage %	P value
Age			
< 20 years	16	10.45%	
20-30 years	99	64.7%	
31-35 years	21	13.7%	
> 35 years	17	11.1%	
BMI			
<19	0	0	-
19- 24.9	13	8.49%	0
25- 29.9	50	32.67%	0.0299
≥ 30	90	58.82%	0.0478

In our study higher percentage of PIH was noted among 20-30 years of age group 64.7% followed by 31-35years age group 13.7% and >35 years age group 11.1%. Majority 90 cases (58.82%) were BM I and p value <0.05 and 50 cases (32.67%) were BMI 25-29.9 and p value <0.05.

Table II

Different types of pregnancy induced hypertension (n=153)

Types of PIH	No of cases (n)	Percentage %	P value
Gestational hypertension	15	9.8%	0.41
Severe Pre-eclampsia	92	60.13%	0.025
Pre-eclampsia	13	8.49%	0.2524
Eclampsia	33	21.56%	0.5201
Total	153	100%	

We observed that gestational hypertension were 15 cases (9.8%), severe preeclampsia 92cases (60.13%) and p value < 0.05, pre-eclampsia 13 cases (8.49%) p value > 0.05, and eclampsia 33 cases (21.56%) and p value >0.05.

Table-III

Distribution of pregnancy induced hypertension diagnosed according to gestational age

Gestational age	No of cases (n=153)	Percentage (%)
< 28wks	46	30.06%
28-32wks	67	43.79%
32-36 Wks	29	18.95%
> 37wks	11	7.18%

In present study shows majority 67 cases (43.79%) diagnosed PIH at her 28-32 weeks of pregnancy and 46 cases (30.06%) diagnosed at her <28 weeks of pregnancy.

Table IV

Distribution of cases according to maternal complication during pregnancy

Complication	No of cases (n=153)	Percentage (%)
Abruptio placenta	16	10.45%
HELLP	10	6.5%
Eclampsia	33	21.56%
PROM	9	5.88%
Preterm labour	8	5.2%
Heart failure	2	1.3%
Pulmonary edema	3	1.9%
Cerebral hemorrhage	2	1.3%
Acute renal failure	0	0%

Eclampsia was common maternal complication in our study seen in 33 cases (21.56%) followed by abruptio placenta 16 cases (10.45%), HELLP 10 cases (6.5%), PROM 9 cases (5.88%).

Table V

Distribution of cases according to mode of delivery (n=153)

Mode of delivery	No of cases (n)	Percentage (%)	P value
Vaginal delivery	39	25.49%	0
Caesarian section	114	74.5%	0.224
Total	153	100%	

We observed that majority of cases114 (74.5%) terminated by caesarian section followed by vaginal delivery was done 39 cases (25.49%). P value >0.05.

Table VI

Distribution of cases according to complication during operation

Complication during pregnancy	No of cases (n=74)	Percentage %
Haemorrhage	42	56.8%
Eclamsia	8	10.1%
Pulmonary odema	0	0
Anesthetic hazard	2	2.7%
Need for ICU	22	29.7%

Original Article

Statistical Evolution of Indications of Cesarean Section in Jahurul Islam Medical College and Hospital

Dil Afroz[1], Shumsun Nahar[2], Ismat Ara[3]

Abstract

Objective: *The aim of this study is to investigate the evolution of indication of cesarean section in the year 2019 (January to December) in comparison to the year 2010 (January to December).*

Design: *Retrospective analytic study.*

Method: *Data was collected from obstetrical record of a tertiary hospital (JIMCH) in 2010 & 2019.*

Result: *Total rate of cesarean delivery was increased from 57% (2010) to 69% (2021). In 2010, most common indication for cesarean section was fetal distress and second most was repeat cesarean section. On the contrary, in 2019, most common indication is repeated cesarean section and second most indication is due to oligohydroamnios with post term pregnancy.*

Conclusion: *Good antenatal care, careful evaluation and proper intranatal care, counseling and motivation of patient for vaginal birth after cesarean section can reduce the rate of cesarean section.*

Key words: *cesarean section, indications, repeats cesarean section.*

Introduction

Cesarean section is an operative procedure whereby the fetuses after the end of 28 weeks are delivered through an incision on the abdominal wall and uterine wall[1]. The incidence of cesarean section is increasing worldwide without clear understanding of its consequences.

The rising incidence of cesarean section is alarming throughout the world[2]. From 2008 to 2016, the percentage of cesarean section was increased from 4% to 31%. The World Health Organization (WHO) stated that cesarean section higher than 10% were not associated with reduction in maternal and neonatal mortality rate.

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The causes of increasing rate of cesarean section all over the world are safety of operation due to improvement in anaesthesia, availability of blood transfusion and antibiotics, increased awareness of fetal well being, identification of high risk pregnancy by ANC visit, caesarean section due to malpresentation, reduction of difficult operative delivery. Beside this, lack of patience in patients and obstetricians is another reason for rising cesarean section. A non medical cause of cesarean section is maternal request[3].

As the cesarean section rate is increased from 57% to 69% and main clinical indication is also changed, the aim of this study is investigating the changing pattern of indication of cesarean section at Jahurul Islam Medical College & Hospital (JIMCH) during last decades as well as introducing measures to reduce cesarean section rate.

Methods

This study includes all women underwent cesarean section at JIMCH starting from 1st January to 31st December in the year 2010 & 2019. Total number of cesarean section and vaginal delivery was counted. Indication of cesarean section was found out and ratio was calculated.

Result

Table – I: Number & Rate of cesarean section

	2010	2019
Total number of delivery	1256	2505
Cesarean section	715	1728
Rate of cesarean section	56.9%	68.9%

Table – II : Parity wise cesarean section

Year	Parity	Number	Percentage
2010	Primi	336	47%
	Multi	379	53%
2019	Primi	740	42.8%
	Multi	988	57.2%

Table – III : Indication of cesarean section at JIMCH.

Indication		2010		2019	
		Number	%	Number	%
1.	Fetal distress	220	30.76%	238	13.77%
2.	Repeat cesarean section	181	25.31%	519	30.03%
3.	Obstructed labour	82	11.46%	74	4.28%
4.	Pre-eclampsia & Eclampsia	59	8.25%	139	8.04%
5.	Malpresentation	41	5.73%	49	2.84%
6.	Post partum & Oligohydroamnios	62	8.67%	348	20.13%
7.	Requested cesarean section (without medical indication)	29	4.50%	162	9.38%
8.	Multiple pregnancy	7	0.97%	14	0.81%
9.	Bad obstetric history (BOH)	6	0.83%	33	1.91%
10.	Gestational diabetes mellitus (GDM)	6	1.11%	118	6.83%
11.	Antepartum hemorrhage (APH)	20	2.79%	34	1.97%

Discussion

This study reveals the rate of cesarean section is increased about 12% during last decade (from 57% in 2010 to 69% in 2019).

According to World Health Organization (WHO) guidelines published in 1985, cesarean section rate should not exceed 15% and later in 1994, they suggested that it should be in between 5 – 15%[4]. But there is no worldwide census as per date about the approximate rate of cesarean section[5].

The increasing rate of cesarean section at this hospital is due to most of the vaginal delivery occurs at home in this area; only complicated and risk cases are brought to hospital. Socioeconomic condition is also an indicator. Some study shows that the rate is less than 1% among the poorest[6].

Studies from developed countries have revealed 5 – 10% higher cesarean section rate in upper social class and cesarean birth is increased 20% among educated women[7,8].

In our study, the main indication of cesarean section in 2010 was fetal distress (30.76%) and in 2021, the rate is only 13.77%. We diagnose fetal distress by monitoring fetal heart rate and perception of fetal movement by mother. Fetal heart rate is an important part of labour monitoring. It can be monitored intermittently or continually.

In our hospital, we monitor intermittently. Normal baseline is 110 – 160 beats per minute. Fetal heart rate above 160 bpm is tachycardia and below 110 bpm is bradycardia, both are considered as fetal distress. During labour, the colour of liquor is observed & meconium stained liquor is considered as fetal distress. Electronic CTG is used to monitor fetal condition.

In 2010, most common indication was fetal distress; 2nd common indication was repeat cesarean section and 3rd was obstructed labour; on the contrary, most common indication in 2019 is repeat cesarean section (30.03%); post term & oligohydroamnios (20.13%); fetal distress (13.77%).

According to World Health Organization (WHO) study, most common indication of cesarean section is repeat cesarean section[9].

This area are fetal distress, malpresentation, oligohydroamnios, bad obstetric history, obstructed labour, maternal request. Some unnecessary cesarean section are done in clinics. We can reduce this rate by encouraging the pregnant women for vaginal birth after cesarean section (VBAC). 60 – 80% patients having previous cesarean section have successful delivery when obstetricians actively promote VBAC[10, 11].

Conclusion

This increasing rate as well as changing pattern of indication of cesarean section can be declined by supportive community antenatal care, counseling the mother for painless vaginal delivery and vaginal birth after cesarean section (VBAC). Trial of labor after cesarean section is successful in 60 – 80% cases[12].

If primary cesarean section is done for non recurrent indication and uterine scar is sound, vaginal delivery can be planned. The success rate is 89 %[13].

Ethical practice by physician, second opinion from a colleague for cesarean section is also helpful. We must evaluate properly to make judicious decision and thereby we can reduce the burden to hospital and society.

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Review Article

Various Staging and Grading System in Colorectal Cancer: A Review Article

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Abstract:

Colorectal carcinoma, is the most common cancer in gastrointestinal system (GIS). Colorectal carcinoma (CRC) is the important cause of morbidity and mortality worldwide. Surgical resection is the primary treatment modality for colorectal cancer, and the pathologic assessment of the resection specimen provides data that is essential for patient management. The essential elements of the pathological assessment of colorectal cancer resection specimens include the pathologic determination of cancer stage, tumor type, histological grade, status of resection margins, and vascular invasion. The prognostic and/or predictive value of various staging system and grading system, as well as guidelines for their derivation and interpretation are reviewed in detail. This review is aimed to summarize the main grading system and the changes of colorectal carcinoma (CRC) staging systems over time, starting from the creation of the classical Duke's classification, modified Astler-Coller staging, widely used TNM (T-primary tumor, N-regional lymph node status, M-distant metastases) staging system, and molecular classifications.

Key Words: Colorectal carcinoma, Grading, Staging, Prognostic criteria.

Introduction:

Colorectal carcinomas (CRC), represents the third most diagnosed cancer and the second cause of cancer-related death[1]. The clinical aggressiveness of a neoplasm and its extent and spread in an individual are necessary for making proper treatment strategy and accurate prognosis assessment. Systems have been developed to express the level of differentiation or grade and extent of a cancer within the patient or stage as parameters of the clinical gravity of the disease. Grading is done on the basis of differentiation of tumor cells. Differentiation refers to the extent to which neoplastic cells resemble comparable normal cells[2]. Cancer staging provides critical information concerning the extent of the disease with local and distant involvement of the disease. Surgical pathologic staging provides information on prognosis and may indicate the need for additional therapy. Pretreatment staging determines surgical and other management strategy[3]. Staging has been proven more clinical value than grading[4].

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Grading: Grading refers to the degree of similarity of the tumor cells with the normal cells when viewed under a microscope. The tissue in good health is have a cell type resembling normal cells clustered together. It is called differentiation and grading is based on the degree of differentiation. The formation of glands (acini) is the basis for grading system in CRC. Well differentiated carcinoma have >95% glandular structure, moderately differentiated carcinoma have 50-95% glands, poorly differentiated carcinoma have 5-50% glandular structure and undifferentiated carcinoma have <5% glandular structures. Mucinous carcinoma and signet ring cell carcinoma by definition are poorly differentiated cancer[5].

Generally, the lower the grade of a tumor the better the prognosis. Tumor grading is an independent prognostic factor since patients with low-grade tumors have a better prognosis than those with high-grade tumors[6]. The conventional grading system though subject to inter-observer bias is still is widely used[7]. Table-1 show grading system based on differentiation[4].

Table-I : Colorectal carcinoma grading system based on differentiation:

Grade	Grade	Description
G1	Well-differentiated	Adenocarcinoma that have >95% glandular structure
G2	Moderately differentiated	Adenocarcinoma that have 50-95% glandular structure
G3	Poorly differentiated	Adenocarcinoma that have 5-50% glandular structure
G4	Undifferentiated	Adenocarcinoma that have <5% glandular structure

Staging: Staging is a term that is used to refer to the location of the cancer, whether or not it has spread, and if it has spread to the other parts of the body. Doctors use diagnostic tests such as Computerized tomography scan, Magnetic resonance imaging and histopathological analysis of the tissue sample to find out the cancer stage. Staging helps forecast therapeutic decisions and predict a patient's prognosis. The major role of proper staging of colorectal carcinoma is to provide information to physician regarding patient's prognosis and the need for adjuvant therapy. For many years, pathologists used the classic Dukes' classification (1932), Astler-Coller classification (1954) and the TNM classification[2].

Table-II

Showing sub classification of Tumor (T) in TNM staging[2]

T	Primary tumor
Tis	In situ dysplasia or intramucosal carcinoma
T1	Tumor invades submucosa
T2	Tumor invades into but not through muscularis propria
T3	Tumor invades through muscularis propria
T3a	Invasion < 0.1 cm beyond muscularis propria
T3b	Invasion 0.1 to 0.5 cm beyond muscularis propria
T3c	Invasion > 0.5 to 1.5 cm beyond muscularis propria
T3d	Invasion > 1.5 cm beyond muscularis propria
T4	Tumor penetrates visceral peritoneum or invades adjacent organs
T4a	Tumor has infiltrated the surface of visceral peritoneum
T4b	Invasion into other organs or structures

The TNM classification system: The TNM classification is currently the most used and prevalent classification system for the staging of colorectal carcinoma. The TNM system is based on the size of the primary tumor, its extent of spread to regional lymph nodes and the presence and absence of blood borne metastasis (R332). It effectively describes the prognostic factors and also incorporates the other classification systems[8]. The TNM classification is currently considered the gold standard for the establishment of prognosis as well as serves as the main guide for treatment modality[9]

Tumor (T): The T in TNM classification stands for Tumor and is used to measure if the tumor has invaded the wall of intestine as well as the depth of invasion.

Lymph Node (N): The N stands for 'Node' is used to assess the presence and degree of involvement of the lymph nodes. The following table-3 indicates the sub classification of the presence of nodal involvement as well as the degree of nodal involvement.

Table-III

Showing sub classification of Nodal Involvement (N) in TNM Staging[2]

N	Regional lymph node
NX	Lymph nodes cannot be assessed.
N0	No regional lymph node metastasis
N1	1-3 regional lymph nodes are involved
N1a	1 regional lymph node involved
N1b	2-3 regional lymph nodes involved
N1c	Nodules comprising of the tumor cells, However, don't appear to be lymph nodes
N2	4 or more regional lymph nodes are involved
N2a	Involvement of 4 to 6 regional lymph nodes
N2b	Involvement of 7 or more regional lymph nodes

Metastasis (M): The M stands for metastasis and it indicates distant spread of the carcinoma present or absent with extend of metastasis (Table-4).

Table-IV

Showing sub classification of Metastasis (M) in TNM staging2

M	Metastasis
MX	Distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis present
M1a	Spread of the carcinoma to at least 1 other part beyond the large intestine
M1b	Cancer has spread to more than 1 other body part beyond the Colon and rectum

Colorectal cancer staging according to the American Joint Commission on Cancer (AJCC):

The AJCC has been publishing different editions of guidelines for the staging of the colorectal cancer since 1959[10]. The status of primary tumor and nodal involvement still is the main factor to describe prognosis and guide therapeutic interventions (Table-5) [11].

Table-V

CRC staging according to the American Joint Commission on Cancer (AJCC)[11]

Stage	AJCC 7th edition TNM classification
I	T1N0M0, T2N0M0
IIA	T3N0M0, T4AN0M0
IIB	T4AN0M0
IIC	T4BN0M0
IIIA	T1N1M0,T1N1cM0,T2N1/ N1cM0,T1N2AM0
IIIB	T3N1M0, T4bN1M0, T1N2bM0, T3N2aM0
IIIC	T4AN2aM0, T3N2bM0, T4aN2M0, T4BN2M0, T4BN1M0
IVA	Any T stage+ Any N stage + M1a
IVB	Any T stage + Any n Stage + M1b

Duke's classification: In 1932 the English pathologist, Cuthbert Dukes presented his staging system known as Dukes stage. However, later on it was modified by Kirklin and in 1967, Turnbull re-modified the Dukes

classification to include distant metastasis as well as introduced a stage for unresectable tumors[10]. There are Duke A to Dukes D type described.

Dukes A: The carcinoma has invaded the inner lining of the colonic wall however no invasion through the colonic wall.

Dukes B: Invasion through the muscular wall however no involvement of the nearby lymph nodes.

Dukes C: Involvement of at least 1 nearby Lymph node.

Dukes D: Distant metastasis, modern day Advanced Colorectal Carcinoma.

Astler-Coller classification: Astler and Coller classification (MAC) was proposed after a few modifications were made in the original Dukes classification in 1954. Astler-Coller classification has been found to be valid for those patients of colorectal carcinoma whose life expectancy can be predicted[12]. MAC describes the following stages.

Stage A: Tumor limited to the mucosa of the wall of the large intestine.

Stage B1: Extending into mucularis propria of the colonic wall, no penetration of muscularis propria and absence of lymph node involvement.

Stage B2: Penetrates the muscularis propria with no involvement of nearby lymph nodes.

Stage C1: the carcinoma extends into the muscularis propria however doesn't invade it. Lymph node involvement positive.

Stage C2: Penetration of the muscularis propria with nodal involvement.

Stage D: Metastatic disease, visible involvement of distant organs.

Stage grouping:

Table-7: Showing the comparison with TNM, Dukes (Fig-1) and Astler-Coller modification of Ducks (MAC) classification[2].

Table-VII

Stage grouping between TNM, Dukes and MAC classification

Stage (AJCC)	T	N	M	Dukes	Astler-Coller (MAC)
0	Tis	N	M0	_	_
I	T1	N0	M0	A	A
	T2	N0	M0	A	B1
IIA	T3	N0	M0	B	B2
IIB	T4a	N0	M0	B	B2
IIC	T4b	N0	M0	B	B3
IIIA	T1-T2	N1/N1c/N2a	M0	C	C1
IIIB	T3-T4	N1/N2a/N2b	M0	C	C1/C2
IIIC	T3/T4a/T4B	N2/N2a/N2b	M0	C	C2/C3
IVA	Any T	Any N	M1a	_	D
IVB	Any T	Any N	M1b	_	D

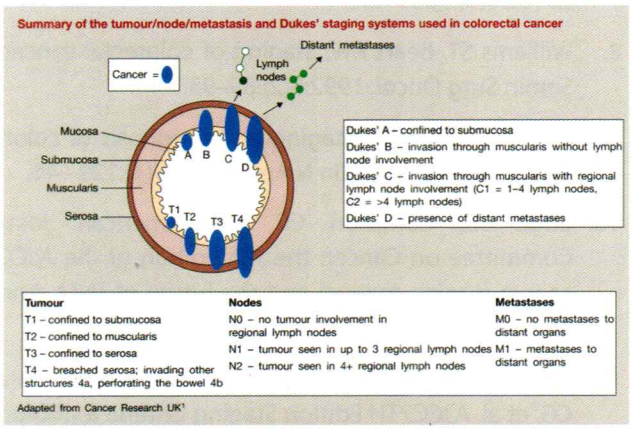

Fig-1: Comparison between Dukes and TNM

Molecular Classification: Molecular Subtype Classification is based on gene-expression studies to know the tumor behavior and response to therapy in same-stage CRC cases[13]. The increased need for and the creation of a molecular classification would facilitate targeted therapy[14]. In this regard, four consensus molecular subtypes (CMS 1-4) were introduced, based on multiple molecular characteristics and the presence or absence of epithelial-mesenchymal transition (EMT)[15].

CMS1 subtype: CMS1 subtype are hypermutated, with BRAF mutant status, microsatellite instability (MSI-H), and an important immune reaction. CMS1 group is also known as MSI immune[16].

CMS2 (canonical) subtype: CMS2 subtypes are chromosomally unstable and represent epithelial subtypes, with activation of WNT and MYC signaling pathways[17].

CMS3 (metabolic) subtype: CMS3 subtypes also represents epithelial subtypes. CMS3 shows metabolic deregulations and KRAS mutations and comprises MSI-H. One-third of cases that are microsatellite stable (MSS)[17].

CMS4 subtype: CMS4 subtypes are also known as the mesenchymal subtype. CRCs with stromal invasion, angiogenesis, and transforming growth factor β (TGF-ß) activation are included in the CMS4 subtype[18]. Hypermethylation of the miR-200 family's promoter was associated with stimulation of the EMT process in this mesenchymal subtype are seen. This subtype frequently diagnosed in advanced stages and associated with worse survival[19].

Discussion:

The most important prognostic factor in colon carcinoma is tumor stage at diagnosis. According to the TNM stages, five-year survival rates more than 90% for stage 0, I (Tis), 80-85% for stage I, 70-75% for stage II, 65-70% for stage III and less than 25% for stage IV disease[20].

TNM is used to determine initial treatment strategy, while pTNM is used to determine the requirement for

post-surgical adjuvant therapy and follow up. For example, surgery is almost always part of the treatment for earlier stage cancers but is not always recommended or possible for advanced or Stage IV cancer. Other therapies, including chemotherapy, radiation therapy, or immunotherapy, are also suggested based on the stage as well as characteristics of the cancer[21].

Dukes staging system for colon cancer based on the degree of tumor invasion and either the presence or absence of lymph node metastasis. The classification was simple and accurate, and was applied to colonic cancer[22]. According to Dukes study, local, lymphatic, and venous spread and tumor grade were recognized as interdependent prognostic variables; however the individual contribution of each variable was not measured[23].

Astler-Coller staging system gives valuable information for the prognosis and management of the particular cancer. Astler-Coller classification has been found to be valid for those patients of colorectal carcinoma whose life expectancy can be predicted[10].

Despite the prognostic power of grading and staging of CRC, outcome for patients with tumors is heterogeneous. A large number of molecular, protein, and carbohydrate markers have been investigated and classified as possible prognostic factors, but none have yet been validated for patient care[24].

Conclusion:

Staging and grading are two separate ways of classifying colorectal cancers. The classification is very important for planning treatment strategy, management and to determine prognosis. In general, higher cancer grade and stage have poor prognosis.

Conflict of Interest: None.

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Letter to the Editor

Evolution and Metamorphosis in my Career: from a Junior Public Health Physician to an UN Employee – What's all about?

Farhana Haque

Soon after my medical graduation (MBBS from Rajshahi Medical College), I obtained a master's degree in Public Health (MPH) from NIPSOM, Bangladesh.

Right after that I joined TMSS (Thengamara Mahila Sabuj Sangha), where I worked for 7 years period of time.

I devoted myself for the successive years in acquiring a wider range of knowledge and skill development activities purely on largely focused in community health.

For the next few successive years I devoted myself to focus on public health issues that ranged from clinico-epidemiology of various infectious and communicable diseases, environmental hazards and food safety issues.

Then I decided to work with any international NGO, particularly with the UN organizations. Thus, I joined the WHO where I served 7 years.

I started my Public Health career since 2012 as a Medical Officer at the TMSS for Emergency Medical support, at Dhaka, and then as Surveillance Medical Officer in Immunization and Vaccination Programme (IVD) for WHO, Bangladesh in Chittagong Division where I was posted for Rangamati and Khagrachhari district and now I am working as Surveillance Medical Officer at Kala-azar Elimination Program (KEP) at WHO for Rajshahi, Rangpur and Khulna Division.

What I learned from Public Health:

- Conducted programme to update the specific situation analysis for the design development and implemented management of health related programmes.
- Experienced in disease surveillance activities and implemented all affordable preventive measures through promoting mass awareness maintaining WHO QC standards.
- Provided technical assistance in capacity building of and upazila, district and divisional health staffs in case management.
- Worked closely and in collaboration with WHO colleagues and partners to discuss operational and implementation issues, provided solutions, recommendations.
- Conducted regular field visits and surveys as programme demanded, and shared information with partners and stakeholders to assess progress and provide technical support and/or refer to relevant officials to resolve issues/problems.
- Developing capacity of district and upazila health staffs in quality work and data analysis to ensure timely corrective actions.
- Have had a hands on orientation and having in depth knowledge about EPI program and its coverage.
- Expertise in EOR (Emergency Outbreak Response) activities.
- Experienced in preparing case studies, quarterly & annual reports.

Immunization and Vaccination Development (IVD) program:

- Providing technical support to the WHO's Program and Surveillance of Immunization and Vaccination Development program in Planning and Implementing programme interventions.

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- Contributed to the development and establishment of sectoral programme goals, objectives, strategies of IVD (as SMO IVD).
- Maintained routine correspondence and liaise with implementing partners organizations, Private hospitals and NGOs and other stakeholders involved in IVD program.
- Provided technical assistance for education and social mobilization of health and family planning officials, NGOs and target population regarding IVD program activities.

Kala-azar Elimination Program:

- Surveillance of Kala-azar Elimination Program in Planning and Implementing programme interventions.
- Contributed to the development and establishment of sectoral programme goals, objectives, strategies of KEP (as SMO KEP).
- Maintained routine correspondence and liaise with implementing partners organizations, Private hospitals and NGOs and other stakeholders involved in KEP.
- Provided technical assistance for education and social mobilization of health and family planning officials, NGOs and target population regarding KEP activities.

What I achieved:

1) Could achieve a 100% targeted facility/UHC ensured access of diagnosis and treatment respectively.
2) Monitoring of stock availability of diagnostics & medicines with quality.
3) I assisted the official administrators to make an 80% increased documentation on referral system at CC (Community Clinic) & UHC (Upazila Health Complex) level.

Achievements in Kala-azar Elimination Program:

1) 90% targeted upazila ensured with updated and validated Kala-azar data under NKEP with timely feedback.
2) Could achieve 75% 1st F/U and 55% 2nd F/U of new KA cases ensured at upazila and facility level.
3) Planned orientation training on early detection & suspect identification of Kala-azar by 75% and PKDL cases for Doctor/Nurse and to the CHWs organized and conducted.

Letter to the Editor

Inception of ARU (Ad-din Research Unit) in Ad-din Women's Medical College and Hospital (AWMCH)

Kashfi Rizwana

Dear Editor,

This Ad-din Research Unit (ARU) of Ad-din Women's Medical College (AWMCH) was born in May, 2021. The inception of the AWMCH was in 1980 to produce quality physicians who would contain essential knowledge, skill, and professionalism to be a good medical practitioner. AWMCH has been continuously striving for excellence from young minds and shaping them to become leaders in the field of med science, research, and public health. It is this mission for striving for excellence that drives the passion of research into new frontiers in the medical research in the country.

The ARU is an interdisciplinary team which expertise in public health, health services research, social psychology, sociology, medical anthropology, epidemiology, evaluation, and applied ethics. ARU teaches, supervises graduate medical students, and conducts research across a range of areas related to gender, health, and society. The ARU not only provides scope for its people, but it also invites others to provide wide range of knowledge and vision to form a versatile team.

I have always been yearning to work in the field of research to have a positive impact on society through it. From which society can be benefited. And now, having been given that opportunity by the ARU with the guidance and assistance of Dr. Kazi Selim Anwar I hope to realize that dream. I feel a great amount of pride and honor to work on such diverse and pressing topics of the medical field, and ARU is the perfect institution for it. I started to work there at September 2021 and got anxious about how I may have adapted to that working environment, and how acceptable for young medical trainees it would be. But, my anxiety disappeared the moment I entered ARU's research room. Everyone starting from all the new medical trainees and the senior research team gets along very well. Everyone has a strong cordial and professional relationship with one another. Creating a very safe and warm working environment. Furthermore, Dr. Kazi Selim Anwar sir has been not only a mentor to look up to for his strong knowledge on an array of topics but also his personality that outshines most people in his field. He is a great mentor to have and someone you can always rely on for advice. I wish ARU all the success.

We got partially involved in certain research work on the clinic-epidemiological survey on dengue which remains a pressing issue in country's public health. We used qualitative, quantitative, participatory, and mixed methods for that study and evidenced synthesis in our work. We had strong credentials in community engagement and in contributing to the translation of research into a change in policy and practice through that project research.

That Dengue clinical research included lab symptoms, signs, testing, antigen, and antibody to prove which DEN virus causes that dengue cases. While the epidemiology signifies all the factors of research that includes the causes of Dengue and who are affected by it, factors that relate to where the subsets or groups are located were segmented by zones. Environmental factors around those zones may have increased or decreased the prevalence of a type of specific Dengue. We also tried to find out what measures are being taken to reduce the disease burden and spread.

Finally, as a recent medical graduate, and a new medical trainee, I am eternally grateful to the ARU for creating a platform for the women in our society so that they can aid in help producing credible research that can help the society they live in, at large. Allowing for dreams to not just remain as dreams for many but turned them into reality for them. Young students like me feel motivated to give their total dedication with sincerity to make an impact that can be recognized internationally soon, through conducting credible research projects in upcoming days.

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