ISSN-0301-035X(Print)
2219-1607(Online)

Bangladesh Medical Journal

Official Organ of Bangladesh Medical Association

Vol. 47 No. 3 September 2018

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Original Article

Comparison between Kangaroo Mother Care with Standard Care in Preterm Neonate Management

*Chowdhury RM[1], Shahidullah M[2], Mannan MA[3], Chowdhury MAA[4], Biswas BC[5], Das KP[6]

Abstract

Preterm low birth weight (LBW) babies are unable to control their body temperature and are at greater risk of illness. Kangaroo Mother Care (KMC) is special ways of caring for low birth weight babies. KMC provide thermal care through continuous skin to skin contact, support for exclusive breast feeding and early recognition and response to complication. The aim of the study is to assess thermal control, morbidities feeding pattern of baby getting KMC in comparison to conventional care. The study also give estimation about duration and cost during hospital stay and growth between the babies of two groups. This Randomized Controlled Trial was conducted in the Department of Neonatology, BSMMU, Dhaka from December 2012 to October 2013. Fifty neonate with birth weight 1250 to 1800 gm, gestational age >30 weeks to <37 weeks, Hemodynamically stable after birth were selected. Twenty five of them were randomly allocated to KMC(Group-I) and 25 of them to Standard Method Care (Group-II). The mother or care giver provided KMC at least 12hours/day in Group-I. Those in Group-II were managed under radiant warmer. During hospital stay both the groups were monitored and after discharge, the neonates were followed weekly till 40 weeks of corrected gestational age. There were no differences in birth weight, gestational age, number of male/female neonates, places of delivery and mode of delivery between two groups. During hospital stay hypothermia (Group-I 4% vs Group-II 24%) and hyperthermia (Group I 8% vs Group II 32%) were significantly low in KMC group. Late onset neonatal sepsis (LONS) developed significantly in Group-II. Though incidence of culture negative LONS did not differ in two groups but incidence of blood culture positive LONS was significantly high in standard care neonates (36% vs.0%; p=0.001). Neonates with KMC care required significantly shorter time to reach full feeding and to start direct breast feeding; also incidence of feeding intolerance was significantly lower in this group. After initial loss, weight gain started earlier as well as achieved the birth weight earlier in KMC group. Morbidities like hyperglycaemia and apnoea were significantly higher in standard care group. Neonates who received standard care stayed significantly longer in the hospital and total cost during hospital stay was also significantly higher in this group. At 40 weeks corrected gestational age, KMC infants showed significantly higher daily weight gain than standard care group. This study concluded that Kangaroo Mother Care provides effective thermal control, decreases the incidence of sepsis, improves feed tolerance, helps to achieving full enteral feeding and birth weight earlier in preterm LBW neonates. KMC enhances growth during postnatal period. KMC also found to reduce hospital stay and treatment cost. Proper implementation of KMC for the management of preterm low birth weight babies is safe and effective care.

Keywords: *Kangaroo mother care, Low birth weight, Breastfeeding, Postnatal growth.*

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INTRODUCTION

Low birth weight babies have an adverse effect on child survival and development. World-wide, twenty-five millions LBW infants are born each year, most of them (96%) in developing countries. Preterm birth is the single most important cause of neonatal mortality, accounting for an estimated 27% of the 4 million neonatal deaths every year.[1] Worldwide each year at least 15 million babies are born too soon each year before 37 completed weeks of pregnancy that is one out of every 10 babies.[2] In Bangladesh total 421, 200 babies had born preterm LBW.[3] Preterm LBW infants are predisposed to heat loss because they have a high ratio of surface area to body weight, little subcutaneous fat, and reduced glycogen and brown 'fat'

stores. In addition, their hypotonic ("frog") posture limits their ability to curl up to reduce the skin area exposed to cold environment.[4] Conventionally these babies are managed under radiant warmer or incubator which is expensive and needs both trained personnel and permanent logistic support. The baby under warmer has increased risk of temperature instability, increase chance of nosocomial infection and increase insensible loss of water.[4]

In 1978 Edger Rey, a Colombian pediatrician first described Kangaroo Mother Care;[5] a neonatal care technique for low birth weight infants is as effective as traditional care.[6] In KMC caring the preterm or low birth weight infants are kept in skin-to-skin contact with the mother and breastfed exclusively. It is also known as kangaroo care (KC) because it can be provided by personnel other than mother like father, grandmother or any other member of family with ensuring exclusive breastfeeding. The major components of KMC are (1) Skin-to-skin contact. The babies are kept firmly against in between mother's breasts in an upright position (2) ensured exclusive breast feeding (3) early discharge from hospital regardless of weight or gestational age.[7] The reported advantages of KMC for the infant are well maintained of skin temperature, reduce incidence of apnea and bradycardia, stable transcutaneous oxygen level, longer quiet sleep periods, shorter hospital stay and therefore have potential for considerable cost savings.[8] KMC decreases the incidence of nosocomial infection, reduce severe morbidity, avoid hospital readmission and increase weight gain in comparison to conventional care group.[9,10] KMC has also been found higher breast feeding rate and improvement of maternal confidence and better bonding with their infant.[11]

Rationale of the study:

Among the three major causes of all newborn deaths, death due to preterm related complication account 45%.[12] Bangladesh has already achieved the MDG 4 and on the way to achieve SDG. So to achieving this goal neonatal death should be reduced. For the management of LBW babies by standard conventional method is a big burden for the society and nation. If we establish KMC in our country LBW baby management will become convenient for us. This study will give us a decision about the feasibility of KMC in our country and it will help us to overcome the burden of expense for the management of preterm LBW babies.

Objective: The present study attempted to find thermal control, morbidities, exclusive breast feeding rate, duration and cost during hospital stay and growth between the babies of two groups.

MATERIALS AND METHODS

This randomized controlled trial was conducted in the Department of Neonatology, BSMMU, Dhaka over a 11 months period. Total 50 neonates were studied who were admitted in NICU according to following inclusion and exclusion criteria.

Inclusion criteria:

-Neonate with birth weight 1250 to 1800 gm.

-Gestational age >30weeks to <37 weeks

- Hemodynamic ally stable after birth.

Exclusion criteria:

-Major life threatening congenital malformation,

- Severe perinatal asphyxia,

- Babies require ventilator or inotropic support,

- Mother is critically ill or unable to comply with the follow up schedule

- Parental refusal for KMC intervention.

The subjects were divided into two groups; Kangaroo Mother Care (Group-I) and Standard Method Care (Group-II). Randomization was achieved by lottery technique and allocation was concealed by sealed envelope technique.

In the KMC group mothers were explained detail about KMC adoption. KMC was initiated as soon as the baby was stable. If the mother is not available initially any of the family members can start KMC. The mother provided skin to skin contact in upright position dressed with a cap, socks and diaper and supported in bottom with a sling/binder. Adequate privacy was ensured. Comfortable chairs and beds were provided to the mothers practicing KMC in the nursery. Skin-to skin contact was given for a minimum of 1 hour at a time and at least for 12 hrs./ day, duration was gradually increased to as long as comfortable to the mother and baby. When the baby is not in KMC, the baby was placed in the cot with adequately clothed and covered. Neonate in the SMC group was managed under radiant warmer. In both the groups, mothers were allowed to handle their babies at any hour of the day breastfeed the babies by nasogastric tube, cup-spoon or directly. Babies in

both the groups were provided feeding, vitamin and minerals supplementation as per protocol.

During hospital stay, both the groups were monitored for daily weight gain by electronic weighing scale, episodes of hypothermia, apnea, feeding intolerance, nosocomial sepsis, hyperbilirubinemia, necrotizing enter colitis, physiological parameters (heart rate, respiratory rate, axillary temperature and oxygen saturation) were measured by a single observer and duration of stay at hospital was recorded. Weight gain pattern, time to reach full enteral feeding, adequacy of breast feeding and duration of hospital stay was also recorded.

Neonates in both the groups were discharged when baby's general health is good, no evidence of infection and no I/V medications, baby is feeding well and receiving breast milk directly or by cup-spoon, gaining weight (at least 15-20 gm./kg/day) for three consecutive day, maintaining body temperature satisfactorily without assistance and mother and family members are confident to care of the baby. After discharge, the neonate was followed weekly till 40 wks. of gestational age in preterm babies. Data were recorded in the follow up sheet.The approval from the Institutional review board was obtained prior to the study. An informed written consent was taken from the mothers or care givers.

Fig-1: Kangaroo Position of baby and mother

Fig-2&3: Mother giving KMC in recumbent position and sitting position

STATISTICAL ANALYSIS

Data were collected by standard questionnaire and check list, compiled and analyzed with the help of SPSS version 20.0.Quantitative data were expressed as mean and standard deviation and comparison will be done by unpaired student's' test.Qualitative data were expressed as frequency and percentage and comparison, carried by chi-square (X^2) test. Probability value (p) of less than 0.05 was considered as statistical significance.

RESULTS

The baseline characteristics were compared in Table-I, significant differences were found in between two groups. In table-II, hypothermia, hyperthermia, and sepsis were found significantly higher in SMC group compared to the KMC group. Episode of apnea found significantly lower in KMC group. Incidence of feeding intolerance differed significantly in two groups (Group I 8% vs. Group II 56%; p=0.001). Neonates with KMC care required significantly shorter time to reach full feeding (Group I 8.32± 2.49 days vs. Group II 19.56 ± 6.80 days; p=0.002). After initial loss, weight gain started earlier (Group- I 9.92± 1.55 days vs. Group II 14.96 ± 2.31 days; p=0.001) as well as achieved the birth weight earlier (Group I 16.56± 6.29 days vs. Group II 22.76 ± 7.20 days; p=0.001) in KMC group. Neonates with KMC care required statistically significant shorter duration to start direct breastfeeding than standard care group (Group I 9.6± 2.16 days vs. Group II 20.12 ± 3.82 days; p=0.04). (Table -III). At corrected 40 weeks of gestational age, KMC infants showed significantly higher daily weight gain than standard care group.

Table-I Neonatal baseline characteristics

Variables	KMC(n-25)	SMC (n-25)	p value
Gestational age(wks.; mean± SD)	32.96 ± 1.27	33.16 ± 1.40	0.49
Birth weight(gms.;mean± SD)	1566 ±155.94	1563 ± 146.13	0.38
Male: Female ratio			
Mode of delivery n (%)	1.77:1	0.66:1	0.08
NVD	5(20%)	7(28%)	
LUCS	20(80%)	17(68%)	
Assisted delivery	0(0%)	4(1%)	
Birth weight groups n (%)			
1250-1400gms.	4(16%)	5(20%)	
1401-1600gms	8(32%)	8(32%)	0.92
1601-1800gms	13(52%)	12(48%)	
Gestational age groups n (%)			
30-32 weeks	12(48%)	9(36%)	
33-34 weeks	9(36%)	11(44%)	0.69
35- <37 weeks	4(16%)	5(20%)	
Classification based on Lubchenco's charts n (%)			
Appropriate for gestational age (AGA)	23(92%)	18(72%)	0.06
Small for gestational age (SGA)	2(8%)	7(28%)	

KMC- Kangaroo Mother Care; SMC- Standard Mother Care.

Table-II: Effect of KMC on morbidities

Variables	KMC(n-25)	SMC(n-25)	P Value
Hypothermia n (%)	1(4%)	6(24%)	0.04
Hyperthermia n (%)	2(8%)	8(32%)	0.03
Late onset neonatal sepsis n (%)	09(36%)	16(64%)	0.04
Culture negative sepsis n (%)	0(0%)	6(24%)	0.009
Hypoglycaemia n (%)	1(4%)	5(20%)	0.08
Hyperglycaermia n (%)	1(4%)	6(24%)	0.04
Apnea n (%)	2(8%)	8(32%)	0.03
Neonatal Jaundice n(%)	16(64%)	19(76%)	0.35
Hospital stay(days; mean ± SD	12.04 ± 2.74	25.24 ± 7.20	0.04

KMC- Kangaroo mother care; SMC- Standard method care.

Table-III: Effect on feeding and weight gain pattern in two groups

Variables	KMC(n-25)	SMC(n-25)	P Value
Time of starting breast feeding (days) (mean±SD)	9.6±2.16	20.12±3.82	0.04
Feeding intolerance n(%)	2(8%)	14(56%)	0.001
Start of feed(days) (mean ± SD)	1.80±0.40	2.20±0.40	0.1
Days to rech full enteral feed(days) (mean ± SD)	8.32±2.49	19.56±6.80	0.002
Adequacy of breast milk production n(%)	22(88%)	16(64%)	0.04
Exclusive breast feeding rate upto follow up n(%)	25(100%)	23(92%)	0.14
Weight gain started(days) (mean ± SD)	9.92±1.55	14.96±2.31	0.001
Birth weight Regain(days)(mean ± SD)	16.56 ± 6.29	22.76 ± 7.20	0.001

KMC- Kangaroo mother care; SMC- Standard method care.

Table-IV: Effect of growth in two groups at 40 weeks corrected gestational age

Variables	Group-I (n=25) mean± SD	Group-II (n=25) mean± SD	p value
Weight gain (gm./day)	27.08±3.02	16.00±2.76	0.002
Head circumference gain (cm/wk.)	0.86±0.09	0.81±0.09	0.07
Length gain (cm/wk.)	0.99±0.16	0.92±0.10	0.08

DISCUSSION

Kangaroo mother care has been proposed as an alternative method for caring preterm low birth weight babies. Neonates in both the groups were found to be comparable in regard to gestational age and birth weight between the groups. Most of the patients were appropriate for gestational age (AGA).Similarly RCT, conducted on comparing KMC and conventional care reported almost identical proportion of AGA.[7] Another study recruited preterm LBW neonates who were SGA.[13] Most of the neonates were between 1601-1800 grams weight range in both the groups (KMC: 52% and standard care 48%) and the difference was not statistically significant. Similar weight distribution (58% in KMC and 50% in conventional care) was observed in other related study.[7]

During the hospital stay, higher incidence of hypothermia (4% vs. 24%) occurred in KMC group and Standard care group respectively, which was statistically significant. This finding was comparable with another study.[13] Hypothermia was found significantly lower in KMC group (6% vs.37%, p=<0.001). Episodes of hypothermia were significantly reduced in KMC group and higher rectal temperature was recorded.[7, 14] Same results also found in other studies.[15,16,17] In another RCT states that hypothermia was significantly less common (13.5 vs. 31.5 episodes/100 infants) in KMC infants.[18] Incidence of hyperthermia was also found higher and statistically significant in standard care group in this study (32% vs. 8%). Similarly higher incidence of hyperthermia was also found in another study.[13]

A large proportion (64%) of neonates in standard care group developed sepsis during the study period. In another prospective RCT on 114 preterm LBW neonates, statistically significant sepsis was found in conventional care group that was 23.2% vs. 6.9% (p= 0.014).[7] Significantly low incidence of sepsis was also reported by other study.[12] Among 206 LBW babies significantly lower incidence of sepsis was found in KMC group 3.9% vs. 14.8% p=0.008.Cochrane review concluded that KMC reduces the incidence of nosocomial infections.[19] In a prospective observational study also found low incidence of sepsis (4.7%).[20]

There were 6 culture positive sepssis and 10 culture negative sepsis in conventional care group (Group-II). On

the other hand there was no culture positive sepsis in KMC group though 9 neonates diagnosed as culture negative sepsis were found. At that time there were so many culture positive cases in the ward. Most probably for this reason, culture positive sepsis was more prevalent in conventional care group.KMC decreases the incidence of nosocomial infection; this benefit is more significant in developing rather than developed countries.[21]

This study showed, significantly higher number of neonates in the standard care group suffered from hyperglycemia (4% vs. 24%) compared to KMC group. Higher numbers of babies suffered from sepsis in standard care group which causes glucose intolerance. Hyperglycemia may be found higher due to sepsis in SMC group. Hypoglycemia was found higher percentage in standard care group (20% vs. 4%) in this study. Similar findings also found in another study.[13] In our study KMC was found significantly reduce the incidence of apnea (32% vs. 8%) that is similar to other study.[7, 21 &22] As regards to hospital stay kangaroo mother care reduced hospital stay significantly ($p<0.05$) in KMC group than standard method care group (12.04 ± 2.74 vs. 25.24 ±7.20). Early attainment of full enteral feed and shorter hospital stay possibly fewer infection episodes in KMC group that is comparable with other study.[7,13,22] In another study, neonates in the KMC group were discharged earlier from hospital (27.2 +/- 7 vs. 34.6 +/- 7 days) than standard care group.[23]

This study showed that mean (days) ± SD to reach full enteral feed was 8.32± 2.49and 19.56± 6.80 in KMC group and standard care group respectively and this difference was statistically significant. In another prospective RCT it was shown that less time required toreaching full enteral feeding in KMC group. This study showed that neonates who got KMC required statistically significant shorter time to start breastfeeding directly than standard care group. Another study also showed same type of results.[12] Adequate amount of breast milk was significantly higher in KMC group mother in this study. Adequacy of breast milk was assessed by daily urine output and weight gain of baby. KMC promoted longer duration of breastfeeding, higher volumes of milk production, exclusive breastfeeding rates at the time of discharged from hospital that revealed with other study.[24, 25] Studies carried out in areas where KMC is done show that mothers who establish skin to skin contact with their preterm babies have a significantly higher milk production than their control group. Furthermore these studies have also revealed that interruption of breastfeeding was more frequent among mothers who were not submitted to this method.[26, 27, 28] We always try to ensure breast milk for the baby from mother or donor milk, formula feeding is not recommended in our institution. Exclusive breastfeeding rate was higher in KMC group (100% vs. 92%) but was not statistically significant. A randomized trial carried out with KMC among babies less than 1500 gram which found higher breastfeeding rates (55% vs.28%) at 6 weeks in KMC group.[29] The number of mothers exclusively breastfeed their babies at 6 week follow-up was double (12/14 vs. 6/14) in the KMC group than in the control group.[30] Another comparative study also found higher rate of exclusive breastfeeding in KMC group.[13] KMC was found to decrease probability of not exclusively breastfeeding (relative risk 0.41, 95% confidence interval 0.25 to 0.68) at discharge.[31] (KMC: 94.4%, control: 72%, $p= 0.002$).

In this study, KMC affect both start of weight gain and birth weight regain significantly. In this study at 40 weeks corrected gestational age, KMC neonates showed significantly higher daily weight gain than standard care group (Group I 27.08± 3.02 gms vs. Group II 16.00± 2.76 gms; p=0.002), head circumference gain (cm/wk.) 0.86± 0.09 and 0.81± 0.09 and length gain (cm/wk.) was 0.99± 0.16 and 0.92± 0.10 in KMC group and standard care group respectively and both differences were not significant statistically.

Another study showed that KMC infants gain larger daily weight, while they were cared in hospital (control: 10.4 ± 4.8 grams, KMC 19.3±3.8 grams, $p<0.001$).[7] In a meta-analysis by Neonatal Review Group of the Cochrane Collaboration randomized trials comparing KMC and conventional neonatal care in LBW showed KMC neonates had gained more weight per day by discharge than controls (weighted mean difference 3.6 g/day, 95% confidence interval 0.8 to 6.4).[32]

CONCLUSIONS

Kangaroo Mother Care maintain effective thermal control, decrease the incidence of sepsis, reduces feed intolerance, helps to achieving full enteral feeding and birth weight earlier in preterm low birth weight neonates. KMC also found to reduce hospital stay, treatment cost and enhances growth during postnatal period.

RECOMMENDATION

With proper implementation, KMC may become a safe and effective method in management of preterm low birth weight babies.

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Original Article

Modified Tubularised Incised Plate Urethroplasty (TIPU) with Dorsal Inlay Preputial Skin Graft: An Outcome Evaluation of 21 cases.

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Abstract

There are different techniques of hypospadias repair, out of them TIPU is widely practiced and popular procedure. Here a midline incision is made over the urethral plate for widening of urethral lumen and creation of neomeatus. Meatal stenosis may subsequently develop at new meatus and it is the limitation of this procedure. In this study TIPU procedure is modified by applying preputial skin graft on incised urethral plate in dorsal inlay fashion and outcome is evaluated. In this prospective study total 21 patients with distal penile hypospadias underwent repair between 2016 and 2017. TIPU urethroplasty was done as usual along with application of a preputial skin graft on midline incised urethral plate. Tubularization was done over appropriate sized catheter and double layers bilateral Dartos flap was applied to cover the suture line. SPC catheterization was done in every patient. On 14th post-operative day urethral catheter was removed and on the same day if patient voids satisfactorily, SPC catheter was also removed. The outcome was evaluated according to the Hypospadias Objective Scoring Evaluation (HOSE) system. 95.23% of the patients achieved apical neomeatus and 90.47% of slit like meatal shape. Mild degree chordee and normal caliber urinary flow was in 9.5% and 95.23% of the patients respectively. 4.76% of the patients developed urethrocutaneous fistula. Dorsal inlay preputial skin grafting is a very simple and feasible technique to maximize the outcome of TIPU procedure. However, multicenter and high volume data are needed for its wide application.

Keywords: *Tubularised incised plate urethroplasty (TIPU), Hypospadias Objective scoring evaluation (HOSE), Hypospadias*

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INTRODUCTION

Tubularised incised plate urethroplasty (TIPU) is very popular reconstructive procedure for distal variety of hypospadias.[1] Cosmetically and functionally it provides excellent outcome.[2] For creation of a new meatus at the tip of the glans, it is necessary to incise urethral plate as distal as possible, consequently neomeatus may be stenosed due to fibrosis.[3] Sometimes, it is difficult to create the position of neomeatus at the tip of the glans.[4] Thus with grafting midline incision can be extended distally at the tip of the glans that reduce fibrosis and other complications associated with TIPU.

This study evaluated both cosmetic and functional outcome by applying the preputial skin graft on incised urethral plate focusing the simplicity of grafting, more anatomical position of neomeatus and reduction of complications of TIPU, i.e. meatal stenosis.

MATERIALS AND METHODS

This prospective study is done in department of urology, Dhaka Medical College Hospital and Center for Kidney Diseases & Urology Hospital, Shyamoli, Dhaka between 2016 and 2017. Total 21 cases are included for this procedure.

Inclusion and exclusion criteria

Patients with irrespective of age with distal penile hypospadias including coronal, subcoronal and distal

penile variety and mild to moderate degree of chordee are included for this study.

Those with mid-penile and proximal variety of hypospadias, severe degree of chordee, history of circumcision, failed hypospadias repair and other congenital anomaly of the genitourinary tract are excluded from this study.

Preoperative evaluation

All patients are evaluated by thorough physical examination and specific investigations to achieve general anesthetic fitness. Urine culture are negative in all cases and no one has any blood dyscrasia.

Table I: Patients characteristics

Median age (range) in years		3.5 (1.5-7)
Hypospadias variety		
Coronal		3 (14.28%)
Subcoronal		6 (28.57%)
Distal penile		12 (57.14%)
Chordee		
Mild	< 10^0	8 (38.09%)
Moderate	10^0 - 45^0	13 (61.90%)

Operative technique

Under general anesthesia and in dorsal lithotomy position, a stay suture is taken at the tip of the glans at 12 O'clock position. Urethral plate is isolated using a U-shaped incision around meatus then subcoronal circumferential incision is given deep to the Buck's fascia. Penile skin including dartos are degloved upto the root of the penis without any tourniquet with great care not to injure the urethra. All fibrous tissues are excised and Nesbit's placation, if needed, is done to correct chordee. Then appropriately measured dorsal preputial skin is harvested and preserved in normal saline. A midline incision on urethral plate is made extending from meatus to the tip of the glans 4-5 mm distal to the margin of urethral plate. The incised plate grafted with harvested skin in a dorsal inlay fashion with 6-0 polyglactin suture by interrupted and quilting manner and at this time a tourniquet is temporarily applied. Then the glans wings are mobilized and urethral plate is tubularised with 6-0 polyglactin suture over an appropriate sized urethral catheter. The suture line is reinforced with double layered preputial dartos flap. Then glanuloplasty, meatoplasty and penile skin coverage is completed. All patient underwent urinary diversion with a SPC catheter. A gentle supportive dressing is applied on penis. On 5th post-operative day dressing is removed and patient is discharged from the hospital. On 14th post-operative day urethral catheter is removed and after satisfactory voiding SPC catheter is removed on the same day.

Outcome assessment

On 5th and 14th post-operative day, at 1 month, 3 month and 6 month patient is followed up and outcome is assessed.

RESULTS

The median (range) age of repair is 3.5 (1.5-7) years. The native meatus is coronal in 3 (14.28%), subcoronal in 6 (28.57%) and distal penile in 12 (57.14%) of the patients. Mild degree of chordee is in 8 (38.09%) and moderate degree of chordee in 13 (61.90%) of the patients. At six months of repair slit like meatal shape is achieved in 19 (90.47%) and meatal location is apical in 20 (95.23%) of the patients. 10 (47.61%) of the patients need Nesbit's plication, among all patients straight penis is achieved in 19 (90.47%) and mild degree chordee in 2 (9.5%) of the patients. Single good caliber urinary stream is in 20 (95.23%) of the patients with Bell shaped flow curve and mean Q^{max}16ml/secis in 20 (95.23%) of the patients is achieved. One patient develops urethrocutaneous fistula that is repaired successfully after 6 months. Acceptable cosmetic results is achieved in 95.23% of the patients using HOSE scoring system.

Table II: Outcome as per HOSE system

Objective outcome		HOSE score	No. of patients (%)
Meatal shape	Slit like	2	19 (90.47)
	Circular	1	2 (9.5)
Meatal location	Apical	4	20 (95.23)
	Proximal granular	3	1 (4.76)
	Coronal	2	0 (0)
	Distal penile	1	0 (0)
Chordee	Straight	4	19 (90.47)
	Mild <10^0	3	2 (9.5)
	Moderate 10^0-45^0	2	0 (0)
	Severe >45^0	1	0 (0)
Urinary stream	Single good caliber	2	20 (95.23)
	Single poor caliber	1	1 (4.76)
Fistula	No fistula	4	20 (95.23%)
	Single coronal	3	0 (0)
	Single proximal	2	1 (4.76)
	Multiple or dehiscence	1	0 (0)

Figure 1: Distal penile variety

Figure 2: Midline incision of urethral plate

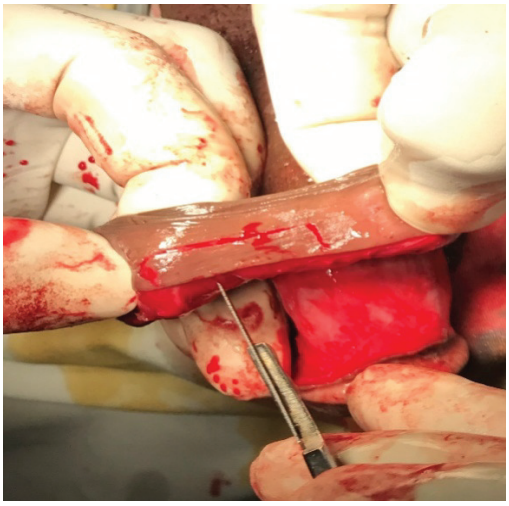

Figure 3: Graft harvesting

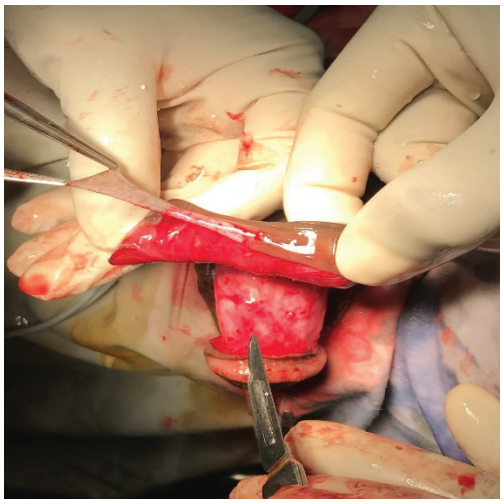

Figure 4: Graft harvesting

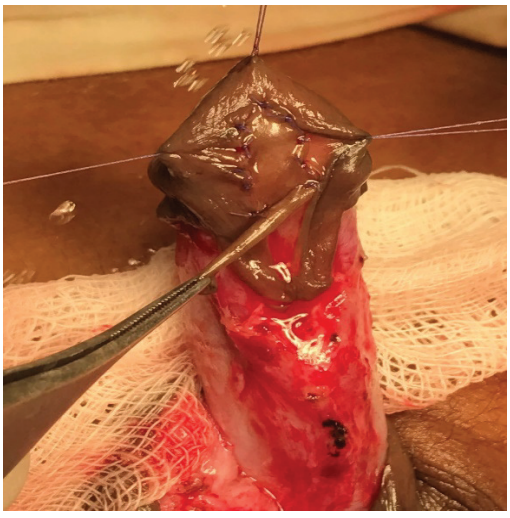

Figure 5: Grafting of urethral plate

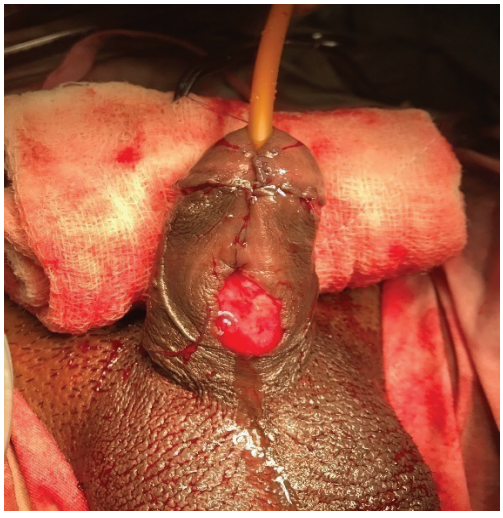

Figure 6: Near completion of procedure

DISCUSSION

Hypospadias is a common paediatric congenital disorder. Reported incidence is 1 in 300 new-born males. Among different reconstructive techniques, TIPU procedure that is proposed by Snodgrass in 1994 is most preferred[1,2,3]. This technique carries different complications like meatal stenosis, urethrocutaneous fistula and malposition of meatus ranges from 2% to 26% [1,4]. However, neomeatus creation at the tip of the glans and slit-like shape is not possible if midline incision is not extended far enough[1,5,6]. Again, if incision is extended far distally meatal stenosis could be occurred as healing by fibrosis. So, to overcome these problems there are some proposal to modify the original procedure. At first Kolon and Gonzales[2] in 2000 proposed modification using grafting of incised plate. With grafting urethral plate is immediately covered with epithelium that has several advantages; facilitates tubularisation with adequate width of urethral plate, creation of neomeatus at the tip of the glans as incision adequately extended distally and reduces the rate of meatal stenosis as healing occurs by primary intention due to epithelial covering[1,2]. Similarly, an anatomical apical slit-like meatus creation is possible due to more extension of midline incision as proposed by Jayanthi[7].

Without grafting the incised urethral plate heals by fibrosis, that may result in the development of urethral strictures and metal stenosis. Similarly, midline incision cannot be extended distally adequately to reconstruct of a meatus at the tip of the glans[1,3]. Grafting immediately covers the incised plate with epithelium and minimises the fibrosis[1,2,8,9].

Grafting of incised plate was first proposed by Kolon and Gonzales[2] and in their study with 32 cases they found that development of meatal stenosis, neourethral stricture and urethrocutaneous fistula is significantly lower.

Meatal stenosis and urethral stricture is not observed in this study though midline incision of urethral plate is extended adequately. Thus the experiences suggest that grafting prevent excessive fibrosis of the incised urethral plate as immediately providing an epithelial surface.

Outcome evaluation should be done both in cosmetic and functional aspect. HOSE assessment scoring system designed by Holland et al.[10] reflect the excellent functional outcome, e.g. a single urinary stream, straight erection, and absence of a fistula and slit-like meatus at the tip of the glans. It is relatively simple to use by clinical observation. A HOSE score of 14 has been recommended as an acceptable outcome. In this study, the HOSE score of ⩾14 was achieved in 95.23 % of patients.

CONCLUSIONS

Dorsal preputial skin graft on incised urethral plate in inlay fashion is a straightforward and easy technique. Apical neomeatus can be achieved satisfactorily as well as reducing the incidence of meatal stenosis. Multicenter study and high volume data are needed to compare and for it universal acceptability and efficacy.

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Original Article

Protective Effect of Curcuma Longa (Turmeric) on Serum Aspartate Aminotransferase and Lactate Dehydrogenase in Isoproterenol Induced Myocardial Injury in Rats

*Nahar S[1], Akhter QS[2], Shumi MN[3], Tanvi NEJ[4], Yeasmin N[5], Akter S[6], Yeasmin S[7]

Abstract

Cardiovascular diseases (CVDs) emerging as a major health problem in Bangladesh due to increase prevalence of risk factors. Conventional cardioprotective drugs are effective but expensive and associated with a number of side effects. Curcuma longa is an important source of traditional medicine for the prevention and treatment of CVDs. The objective of the study was to evaluate the protective effect of Curcuma longa on isoproterenol induced myocardial injury in rats. This experimental study was carried out in the Department of Physiology, Dhaka Medical College, Dhaka during 2015. Total 21 Wistar albino male rats, aged 85 to 100 days, weighing 100 to 150 g (initial body weight) were selected for the study. After acclimatization for 14 days, the rats were divided into three groups. Group A (base line control group), Group B (isoproterenol treated control group) and Group C (Curcuma longa pretreated and isoproterenol treated group). Each group consisted of 7 rats. On the 10th day of experiment, rats were sacrificed after taking final body weight. Blood samples were collected from the heart. Serum aspartate aminotransferase (AST) level was estimated by Colorimetric method and lactate dehydrogenase (LDH) level was estimated by ELISA method. The statistical analysis was done by one way ANOVA and Bonferroni test as applicable. In this study, the mean initial and final body weight of the rats were almost similar and showed no statistically significant difference among the groups. The mean serum AST and LDH levels were significantly (P<0.001) higher in Group B than those of Group A. Again, these levels were significantly (P<0.001) lower in Group C than those of Group B group. From the results, it can be concluded that Curcuma longa has cardioprotective activity on isoproterenol induced myocardial injury in Wistar albino rats.

Keywords: *Curcuma longa, Cardioprotective, Isoproterenol.*

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INTRODUCTION

Cardiovascular diseases (CVDs) remain as one of the leading causes of death though several advancements in the medical interventions. Among these, particularly the ischemic heart diseases and acute myocardial infarction (AMI) are most alarming.[1] Due to increase prevalence of cardiovascular risk factors coronary heart disease increasing in rural population of Bangladesh. The major risk factors are hypertension, dislipidemia, diabetes mellitus, obesity, sedentary life style, old ages and cigarette smoking.[2,3] In Bangladesh CVDs is an eminent medical and public health problem and is one of the major causes of death.[4]

Isoproterenol (ISP) is a sympathomimatic, β-adrenergic receptor agonist.[5] It is used to produce myocardial injury in experimental animals for the evaluation of cardioprotective agents.[6] High doses of isoproterenol injection destroy myocardial cells by increasing ionotropic effect of the heart that increases myocardial oxygen demand. It also causes severe oxidative stress in myocardium by generating free radicals and stimulates lipid peroxidation. As a result, cell membrane permeability increased and cytosolic enzymes are released into the bloodstream. Therefore, therapeutic interventions having antioxidants or free radical scavenging activity may be

useful against oxidative stress associated with various cardiovascular diseases including myocardial infarction.[7- 9]

Spices and herbs are renowned sources of natural antioxidants that can prevent oxidative stress. The therapeutic effects of folk plants are mainly recognized by the presence of flavonoids.[10] In modern medicine, flavonoids are indicated as a potential treatment for CVDs due to its anti-inflammatory, antioxidant, and vasodilator effects.[11]

Herbal medicines are commonly used and considered as a convenient treatment because of their safety, efficacy and cost effectiveness as well as better compatibility. Plant derived medicines are comparatively safer than synthetic drugs.[12] According to World Health Organization reports, about 80% peoples of developing countries preferred traditional medicine for their primary health care, and about 85% of such traditional medicine derived from plant extracts.[13]

Curcuma longa Linn. [Family: Zingiberaceae] is commonly known as turmeric. It is a rhizomatous perennial herb that is known as the "golden spice" as well as the "spice of life." It is widely used as a spice, food preservative and colouring material in India, China and South East Asia. Curcuma longa is widely cultivated in Bangladesh. So, it is cheap and easily available in our country.[14] As a medicine, Curcuma longa has long been used to treat many health problems such as liver diseases, inflammation, digestive disorders and skin diseases. Curcuma longa possess several beneficial effects but no side effects have been reported till now.[15] So it can be consumed as a dietary product all over the year.

Some investigators observed that body weight was significantly decreased and serum AST and LDH levels were significantly increased in rats treated with ISP (200mg/kg bw, subcutaneously) for 2 days. [16] In cardiotoxic rats, the body weight might be decreased as a result of reduced intake of food. These are due to direct toxic effects on intestinal mucosa. [17] During myocardial injury, AST and LDH released from the myocardial cells into the serum due to increased cell membrane permeability.[18]

Some other researchers suggested the cardioprotective effect of curcumin against doxorubicin induced myocardial toxicity in albino rats. Curcumin, a major active component of Curcuma longa significantly decreased serum AST and LDH levels. It maintains the normal structural and architectural integrity of myocardial cell by stabilizing the membrane.[19] Therefore, on the basis of this background the present study was designed to evaluate the cardioprotective effect of Curcuma longa on isoproterenol induced myocardial injury in Wistar albino rats.

MATERIALS AND METHODS

This experimental study was conducted in the Department of Physiology, Dhaka Medical College, Dhaka from January to December, 2015. The protocol of this study was approved by Ethical Review Committee (ERC) of Dhaka Medical College. A total number of 21 Wistar albino male rats, aged 85 to 100 days, weighing 100 to 150g were selected for the study. The animals were purchased from the animal house of Department of Pharmacy, Jahangirnagar University, Savar, Dhaka. The animals were kept in metallic case in the animal house of Institute of Nutrition and Food Science, University of Dhaka. Before conducting the study, they were kept in a standard laboratory condition on a 12/12 hour light/dark cycle for acclimatization. Total study period was 23 consecutive days. During this period all the rats had free access to food and water. After acclimatization for 14 days, the rats were divided into Group A (base line control group), Group B (isoproterenol treated control group) and Group C (Curcuma longa pretreated and isoproterenol treated group). Each group consisted of 7 rats. Initial body weight of all the rats was measured on 1st day of experiment. All groups received basal diet for 9 consecutive days. In addition to basal diet, rats of Group A received normal saline orally (1ml/kg body weight) using intragastric tube for 9 consecutive days and Group B received isoproterenol subcutaneously (150 mg/kg body weight/day) on 8th and 9th day. Rats of Group C received ethanolic extract of Curcuma longa orally (200 mg/kg body weight) for 9 consecutive days and isoproterenol subcutaneously (150 mg/kg body weight/day) on 8th and 9th day. After taking final body weight, all the rats were anaesthetized by 30% chloroform and sacrificed on 10th day. About 5ml of blood were collected from the heart of each rat. The blood was centrifuged and supernatant serum was collected and preserved in refrigerator for biochemical analysis. Serum aspartate aminotransferase (AST) level was estimated by Colorimetric method[20] and lactate dehydrogenase (LDH) level was estimated by ELISA method.[21] Data were expressed as mean (±SD). The results were compared among different groups. The statistical analysis was done by one way ANOVA and Bonferroni test as applicable. P value <0.05 was considered as significant.

RESULTS

The mean (±SD) initial (I) body weights were 127.14±14.96, 127.14±11.12 and 115.71±13.97 gm on day-1 whereas the final (F) body weight were 122.85±11.12, 112.85±11.12 and 111.71±10.67 on day-10 in group A, B and C respectively. The mean (±SD) initial (I) and final (F) body weight of the rats were almost similar and showed no statistically significant difference among the groups (Figure 1).

In this study, serum AST and LDH levels were significantly higher (P<0.001) in Group B in comparison to those of Group A. Again, these levels were significantly lower in Group C than those of Group B. Moreover, LDH (P<0.001) level was significantly higher in Group C than that of Group A but there were no significant difference between AST level of Group A and Group C (Table I).

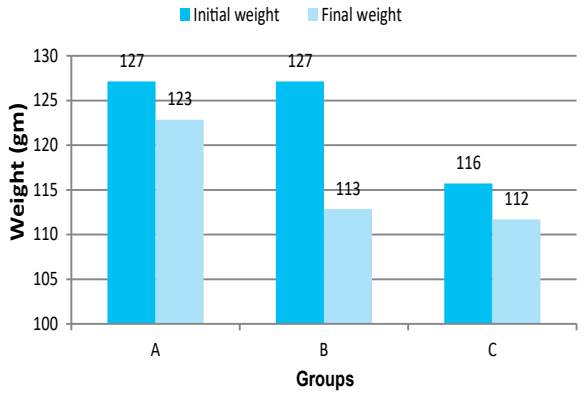

Figure 1: Mean initial and final body weight in different groups of rats (N=21)

N = Number of rats A: Baseline control group
B: Isoproterenol treated control group
C: Curcuma longa pretreated & isoproterenol treated group

Table I: Serum AST and LDH levels in different groups of rats (N=21)

Parameter (U/L)	Groups		
	A (n=7)	B (n=7)	C (n=7)
AST	35.70 ± 2.71	614.92 ± 73.39***	41.38 ± 2.76###
LDH	206.7±73.61^^^	731.59±124.41***	452.55 ± 70.75###

Values are means ± SD. Statistical analysis was done by one way ANOVA and then Bonferroni test. N= Number of rats. For serum AST & LDH, (***p<0.001 A vs B), (###P<0.001 B vs C). For serum LDH (^^^p<0.001 A vs C) A= Baseline control group, B= Isoproterenol treated control group C= Curcuma longa pretreated and Isoproterenol treated group.

DISCUSSION

In the present study, the final body weight of all the rats were decreased than their initial body weight, but no significant difference were observed. Similar type of observation was found by some other research worker.[22] But some investigators observed that body weight was significantly decreased in experimental myocardial injury. In that study the researcher used isoproterenol (300mg/kg bw, subcutaneously) to induce myocardial injury.[23]

In this study, mean serum AST and LDH levels were significantly higher (P<0.001) in isoproterenol treated control group in comparison to those of baseline control group. Again, these levels were significantly lower (P<0.001) in Curcuma longa pretreated and isoproterenol treated group than those of isoproterenol treated control group. Similar findings were also reported by different investigators but they used curcumin as an alternative of Curcuma longa.[19,24] Mean serum LDH level was significantly higher (P<0.001) in Curcuma longa pretreated and isoproterenol treated group than that of baseline control group. But mean serum AST level was non significantly higher among those groups. However, almost similar type of published data was not observed to compare these findings.

Some researcher observed that subcutaneous injection of ISP in experimental animals causes severe oxidative stress in myocardium resulting infarct like lesion in the heart muscles.[9] It generates free radicals and stimulates lipid peroxidation that causes irreversible damage to the myocardial membrane in experimental myocardial infarction.[8] Thus serum aspartate aminotransferase (AST) and lactate dehydrogenase (LDH) enzymes were significantly increased due to cell necrosis.[25,26] But pretreatment with Curcuma longa protects myocardium against isoproterenol induced myocardial injury which is evidenced by improved histopathological findings of myocardium.[27]

In the present study, isoproterenol induced myocardial injury in rats was evidenced by reduced body weight, higher level of serum AST and LDH levels. These changes may be due to increased production of free radicals which initiate lipid peroxidation and subsequent myocardial cell damage. Again, increased body weight, lower level of serum AST and LDH in Curcuma longa pretreated and isoproterenol treated rats suggested that Curcuma longa is responsible for cardioprotection. This effect is possibly due to antioxidant and free radical scavenging activity of Curcuma longa.

CONCLUSIONS

The result of the present study reveals that the Curcuma longa has cadioprotective effect on isoproterenol induced myocardial injury in rats. So, it is acceptable as a daily source of natural antioxidant and an herbal medicine for the prevention of cardiovascular disease.

Acknowledgement

The authors of this study gratefully acknowledge Professor Dr. Sheikh Nazrul Islam, Institute of Nutrition and Food Science, University of Dhaka, for the cooperation regarding laboratory facilities he provided.

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Original Article

Association between Serum Ferritin and Pre-eclampsia

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ABSTRACT

Pre-eclampsia (PE) is a major cause of maternal and prenatal morbidity and mortality in developing countries. PE occurs in about 6% of the general women population. It complicates about 5-15% of pregnancies over 20 weeks and is responsible for 16% of maternal mortality. Pre-delivery serum Ferritin concentration was significantly higher in patients with eclampsia than in healthy pregnant women. The serum ferritin was the best sensitive marker of the iron status parameters reflecting the preeclampsia. The aim of the study is to explore the association between serum ferritin and Preeclampsia and to do a comparison of serum ferritin to assess risk of development preeclampsia between case and control. This is a case-control study with laboratory methods. The study was carried out in Sir Salimullah Medical College and Hospital. Serum Ferritin was tested in the department of biochemistry, Bangabandhu Sheikh Mujib Medical University (BSMMU). The study was carried out from January 2008 to December 2009 and the sample size was 80. A total of 80 pregnant women, comprising of 40 PE and 40 normotensive primi or multigravida in the third trimester were enrolled in the study. The mean Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP) were significantly higher in PE group on both occasions compared to normotensive women with similar chronological age gestational age. Out of the 40 cases 65% patients had severe proteinuria (+++) and 17.5% had moderate proteinuria (++) and 17.5% had mild proteinuria. The difference between case and control with respect to proteinuria was highly significant. More than two third (67.5%) of the cases did not have any iron deficiency anemia, while the rest (32.5%) had mild iron deficiency anemia. In the present study, the mean serum Ferritin level of PE group was almost 10 times higher (167.11 ± 10.43 ngm/ml) than that of controls (17.0 ± 3.03 ngm/ml) than that of control (431.0 ± 10.93 gm/dl). More than one-third of the cases showed serum ferritin >210 ngm/ml, compared to none of the control group. Serum Ferritin level is significantly higher in preeclamptic patients than the control group.

Keywords: *preeclampsia, Ferritin*

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*For corrcspondence

INTRODUCTION

Preeclampsia (PE) is a hypertensive complication of pregnancy associated with well-documented risk for the mother and the fetus. Despite the advancement in the field of medicine, preeclampsia/eclampsia still remains the third leading cause of maternal mortality. [1] It is a major cause of maternal and prenatal morbidity and mortality in developing countries.PE occurs in about 6% of the general population. It complicates about 5-15% of pregnancies over 20 weeks and is responsible for 16% of maternal mortality and 28% of prenatal mortality.[3]Though preeclampsia/eclampsia is a largely preventable condition and the incidence is decreasing in developed countries. Unfortunately, such cases still pose a great problem in developing countries like Bangladesh.

PE is hypertension associated with proteinuria and edema, occurring primarily in nulliparas after the week of gestation, most frequently near term. Hypertension and proteinuria are simple clinical criteria for the diagnosis of PE. Women with PE are at increased risk of complications such as abruptio placenta, acute renal failure, cerebral hemorrhage, disseminated intravascular coagulation, pulmonary edema, circulatory collapse, and eclampsia.[4]

PE is a disease of multiple theories. Among them genetic, immunological, circulatory factors, uterovascular changes, and endothelial dysfunction are important. Despite extensive research, the mechanisms of underlying PE are

yet to be defined.[5] As pathogenesis is obscure, definite preventive and curative measures are yet not possible.

Although exact etiology of PE is still unknown, results of past studies show that abnormal placentation plays a crucial role in its pathogenesis. In cases of pregnancies complicated with PE, not all the spiral arteries of the placental bed are invaded by trophoblast. Those arteries that are invaded, the first phase of trophoblastic invasion occurs normally, but the second phase does not occur and the myometrial portions of the spiral arteries retain their reactive musculoelastic walls.[6] The qualitative and quantitative restriction of normal physiological changes results in restricted placental blood flow, which becomes more critical with advancing gestation as the demand of the conceptus increases.[7] In addition, acute atherosis develops in the myometrial segments of the spiral arteries. Acute atherosis may progress to vessel obliteration with corresponding areas of placental infarction.[8]

Several independent investigators have demonstrated through studies that vascular endothelium provides a single target organ system involved in PE. The relatively new theory of endothelial injury explains many of the clinical findings in PE.[9] The ischemic placenta are the cause of generalized endothelial cell damage that gives, rise to the symptoms of hypertension, proteinuria, and sudden edema characteristic of this condition.[10] It has been suggested that lipid peroxidation may play or role in the pathology of PE.[11] This high level of lipid hydroperoxides believed to be present in PE are among the candidate agents capable of causing such damage to the vascular euothelium.[12]

Serum iron concentration was higher in patients with preeclampsia (mean of 135 ug/dl) compared to normotensive parturient (mean of 62 ug/dl) and chronic hypertensive parturient (mean of 72 ug/dl). Mean iron for patients with eclampsia was 203 ug/dl and 137 ug/dl) for patients with severe preeclampsia. A concomitant increase in serum Ferritin (mean of 59 ng/ml vs 19 ng/ml for normal) persisted longer.[13]

Pre-delivery serum Ferritin concentration was significantly higher in patients with eclampsia than in healthy pregnant women. [14]The serum Ferritin was the best sensitive marker of the iron status parameters reflecting the preeclampsia and the result may support the role of iron as a catalyzer of oxidative stress and lipid peroxidation in the pathophysiology of preeclampsia.[15]

Hyperferritinemia in patients with preeclampsia appears to be attributable to the combined effects of increased Ferritin synthesis and the release of intracellular Ferritin from damaged cells.[16]Considering these facts, this study was designed to clarify the role of iron parameters in the pathogenesis of PE.

MATERIALS AND METHODS

1. Research design: This is a case-control study with laboratory methods.
2. Place of study: The study was carried out in the Department of Obstetrics and Gynaecology, Sir Salimullah Medical College and Hospital.Serum Ferritin was tested in the Department of Biochemistry, BSMMU.
3. Duration of study: The study was carried out from January 2008 to December 2009
4. Study population: There were 40 cases of preeclampsia and 40 normotensive pregnant women were enrolled from Sir Salimullah Medical College and Hospital, Dhaka. The normotensive pregnant women were taken as control.
5. Sampling and selection criteria: Purposive Sampling technique.
6. Sample size: 80 samples.
7. Data Collection:

Inclusion criteria for a case are

- Primigravid or multigravid women with blood pressure 140/90mmHg. This rise in blood pressure was observed at least on two occasions 6 hours apart.
- Urinary protein of 0.3gm/L or more and
- Single gestation.

Inclusion criteria for control are

- Normotensive primigravid or multigravid women matched for age and gestation with cases.
- Normal BP recording throughout pregnancy
- Urinary protein nil
- Single gestation

Relevant clinical data were recorded in the predesigned data collection sheet.

Collection of blood sample: Maintaining all aseptic precautions, 6 ml of venous blood was drawn from the antecubital vein of each pregnant woman in the sitting position 2 ml of that blood was taken in EDTA tube for Hb% and peripheral blood film. 4 ml of blood was immediately transferred into a clean, dry test tube and was centrifuged with 1 hour of collection. The serum thus obtained was stored at — 70' C until assessed.

8. Laboratory methods

- Estimation of serum Ferritin by MEIA.
- Estimation of Hb% by Colorimetric method.
- Estimation of blood urea, serum creatinine, serum electrolyte, random blood sugar, serum bilirubin, SGPO, SGOT by the analyzer.

Procedure:

The AxSYM Ferritin reagents and sample is pipette in the following sequence.

Sample and AxSYM Ferritin reagent require for one test is pipette by the sampling probe into various wells of a reaction vessel (RV).

Sample is Pipetted into one well of the RV. Anti Ferritin coated microparticle, anti Ferritin alkaline phosphates conjugate, specimen diluents and TRIS buffer are pipetted into another well of a reaction vessel. The RV is immediately transferred to the processing center. Further pipetting is done in the processing center.

Estimation of Urinary protein:

About 5 ml or midstream random urine sample was collected in a clean and dry test tube. The reagent strip was dipped into the urine for making sure that all the reagent areas have contacted the urine specimen. The excess urine was removed by running the edge of the strip against the rim of the test tube and was held in horizontal position to prevent mixing of the chemical from adjacent reagent areas and to prevent contamination of hand with urine. Then the strip was properly oriented near the appropriate color chart on the container label and read the results under good lighting. Urinary protein changes the color of the reagent strip from yellow to green.Urinary protein of 0.3 gm/l or more were considered as positive.

Data Processing & Analysis:

Data were processed and analyzed using computer software SPSS version 11.5

RESULTS

A total of 80 pregnant women, comprising of 40 PE and 40 normotensive primi or multigravida in the third trimester were enrolled in the study. Both the groups were matched for their chronological age and gestational age. The blood pressure was recorded on admission and 6 hours later. No significant differences were found between cases and controls with respect to age, socioeconomic status, education, parity, gravidity, gestational age, and antenatal checkup.

The means SD) SBP (mmHg) on admission was 155.25 ± 14.14 for PE and 103.25 ±8.29 for the control group and after 6 hours it was 145.75 ± 8.44 for PE and 99.75 ±6.20 for the control. The mean (± SD) DBP (mmHg) on the admission was 109.38 ±12.31 for PE and 68.00 ± 8.23 for the control group and after 6 hours it was 10.38 ±10.65 for PE and 65.25 7.51 for control. So the mean SBP and DBP were significantly higher in PE group on both occasions compared to normotensive women with similar chronological age gestational age (p<0.001). Of the 40 cases 65% patients had severe proteinuria (+++) and 17.5% had moderate proteinuria (++) and 17.5% had mild proteinuria.Whereas, none of the control groups had any degree of proteinuria. The difference between case and control with respect to proteinuria was highly significant (p<0.001)

Table-I : The distribution of age between cases and controls

Age (yrs)	Group		p-value
	Cases (n=40)	Controls (n=40)	
<20 yrs	5 ,(12.5%)	3 ,(7.5%)	
21-30 yrs	32 ,(80.0%)	35 ,(87.5%)	0.659
31-40 yrs	3 ,(7.5%)	2,(5.0%)	
Mean age	25.15+4.47	25.68+3.55	

Table II: Distribution of educational level of cases and controls

Education	Group		p-value
	Cases	Controls	
Illiterate	14(35.0%)	15(37.5%)	
Primary	17(42.5%)	13(32.5%)	0.693
Secondary	4(10.0%)	8(20.0%)	
Higher Secondary	2(5.0%)	1(2.5%)	
Graduate	3(7.5%)	3(7.5%)	

More than two third (67.5%) of the cases did not have any iron deficiency anemia, while the rest (32.5%) had mild iron deficiency anemia. In contrast, 55% of the controls exhibited mild iron deficiency anemia. The mean hemoglobin level of cases was also revealed to be significantly higher (11.06 ± 1.15 gm/dl) than that of controls (8.9 ± 1.3 gm/dl) (p<0.001).

Table III: Distribution of gravidity among cases and controls

*Gravidity	Group		**p-value
	Cases (n=40)	Controls (n=40)	
Primigravida	26(65.0%)	28(70.0%)	0.406
Multigravida	14(35 0%)	12(30.0%)	

Table IV: Distribution of gestational age of cases and controls:

Gestational age (weeks)	Group		**p-value
	Cases (n=40)	Controls (n=40)	
<37	38(95.0%)	36(90.05)	0.338
≥37	2(5.0%)	4(10.05)	
Mean gestational age	33.95+3.02	33.13+3.66	

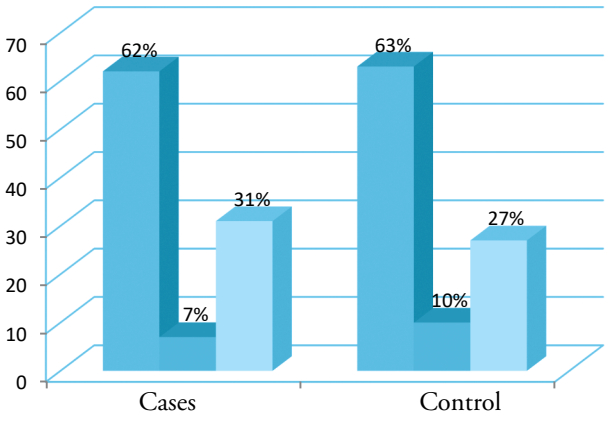

Figure-1 Distribution of Antenatal checkup

In the present study the mean serum Ferritin level of PE group was almost 10 times higher (167.11 ± 10.43 ngm/ml) than that of controls (17.0 ± 3.03 ngm/ml) (p<85 ggm/dl) than that of control (431.0 ± 10.93 ggm/dl) (p<0.001).The systolic blood pressure of cases was observed to be significantly higher (155.25 + 14.14 mmHg) compared to that of controls (103.25 + 8.29 mmHg) (p< 0.001). The diastolic blood pressure of cases was also significantly higher (109.38 +12.31 mmHg) than that of controls (68.0 + 8.23 mmHg) (p < 0.05) (Table V).

Table V: Comparison of blood pressure on admission between case and control:

Blood Pressure on admission (mmHg)	Group		p-value
	Cases (n=40)	Controls (n=40)	
Systolic BP (Mean + SD)	155.25+ 14.14	103.25+ 8.29	<0.001
Diastolic BP (Mean + SD)	109.38 + 12.31	68.0 + 8.23	

In the case group, both systolic and diastolic BPS (145.75 + 8.44 and 100.38 + 10.65 mmHg respectively) was found to be significantly higher compared to those in the control group (99.75 + 6.20 and 65.25 + 7.51 mmHg respectively) 6 hours apart (p < 0.001) (Table VI).

Table VI: Comparison of blood pressure 6 hours apart between case and control(with drug):

Blood Pressure 6 hours apart (mmHg)	Group		*p-value
	Cases (n=40)	Controls (n=40)	
Systolic BP (Mean + SD)	145.75+ 8.44	99.75+ 6.20	<0.001
Diastolic BP (Mean + SD)	100.38+ 10.65	62.25+ 7.51	<0.001

Table 7: Comparison of Hb% between case and control

Hb level	Group		*p-value
	Cases (n=40)	Controls (n=40)	
Hb	11.06± 1.15gm/dl	8.9 ± 1.3 gm/dl	<0.001

Table 8 Comparison of proteinuria between case and control

Proteinuria	Group		*p-value
	Cases (n=40)	Controls (n=40)	
Nil	0	40	<0.001
(17.5%)	7	0	
(65.0%)	26	0	
(17.5%)	7	0	

The mean serum Ferritin level of cases was almost 10 times higher (167.11 +10.43 ngm/ml) than that of controls (17.0 + 3.03 ngm/ml) (p < 0.001) (Table-IX). More than one-third of the cases showed serum Ferritin >210 ngm/ml, compared to none of the control group (Table X).

Table 9. Comparison of serum Ferritin between cases and controls:

Serum iron parameters	Group		*p-value
	Cases (n=40)	Controls (n=40)	
Serum Ferritin (ng/ml)	167.11 + 10.43	17.0 + 3.03	<0.001

Table10. Comparison of serum Ferritin to assess risk of development preeclampsia between case and control:

Serum Ferritin	Group		p-value
	Cases (n=40)	Controls (n=40)	
Serum Ferritin (ng/ml) (>210 ngm/ml)	15 (37.5%)	Nil	<0.001

DISCUSSION

Studies carried out in other countries also showed similar results. Margaret el al in their study reported similar results regarding serum Ferritin in the PE patients when compared to control group.T hey showed in their study showed that percent saturation of transferrin was significantly higher in PE patients than the control group. AST level was done as an indicator of liver damage.[17]

Vaughan et al in their study also found that serum Ferritin was significantly higher in preeclamptic patients when compared to control group which is similar to the present study and they suggested that increased Ferritin levels may be responsible for placental oxidative stress and abnormalities in the antioxidants and thromboxane. They found no significant correlation between serum iron, serum Ferritin, total iron binding capacity, percent saturation of total iron binding capacity and indices of hepatocellular injury (AST).[18]

The study carried out by Vitoratos et al showed similar result regarding the mean serum Ferritin level in women with PE when compared to a matched control group

(p<0.01 respectively). Vitoratos et al also found higher serum ceruloplasmin level compared to those control group (p<0.01), while the mean ferroxidase activity levels of ceruloplasmin did not differ significantly between PE group and control group. This result indicates that the plasma of preeclamptic women declines the ferroxidase activity of ceruloplasmin and reduces total iron binding capacity. Thus it seems that the plasma of preeclamptic women lacks the protective antioxidative action of this substances.[19]

Philip Samuel et al demonstrated a similar result regarding serum Hb% in the PE patient when compared to the control group. This observation confirms the findings of Entman et a1.[20]

Stephen et al reported similar results regarding mean (±SD) serum Ferritin concentrations among preeclamptic women compared to the control group. The mean (±SD) Ferritin level of patients with severe preeclampsia was also revealed to be significantly higher than that of patients with mild preeclampsia (p<0.02).[21]

In the present study percent saturation of transferrin, serum AST, LDH, ceruloplasmin, malondialdehyde, and total bilirubin were not assessed but these parameters were studied by other investigators. In the present study, the risk of developing preeclampsia was found to be associated with abnormal serum Ferritin. The study revealed that elevated serum Ferritin increases the risk of developing preeclampsia among pregnant mothers by at least two-fold.

In spite of improvement of antenatal check up, PE still remains a major health problem in the field of obstetrics both in developing countries like Bangladesh and in developed countries. It is the most important cause of maternal death in the USA, Scandinavia, Iceland, Finland and UK.[22]The etiology of PE is still unknown. Several studies are going on in this field. The present study was designed to see the role of serum Ferritin in the pathophysiology of PE.

Philip Samuel et al observed the strongest correlations between serum iron, LDH, and plasma hemoglobin. A strong correlation was also observed between total bilirubin and serum iron concentration. Parameters of

hepatocellular damage correlated poorly with serum iron (AST, p.008). LDH can originate from red blood cells or the liver and they did not have the ability to distinguish between these isoenzymes. So they suggested that this increase in iron arise from a mild, ongoing intracellular hemolysis.[23]

Hubel et al observed an increased level of serum malondialdehyde in preeclamptic patients than those of the control group. In their study electron, paramagnetic resonance spectroscopy confirmed that total transferrin in PE patients was significantly lower and percent saturation of transferrin was higher in PE than those in control group.[24]

CONCLUSION

Higher Serum Ferritin level are associated with preeclampsia.

LIMITATION OF THE STUDY

The researchers faced several problems during the study:

- Sample size is small
- All confounders could not be excluded
- Lack of fund and resource was a major problem of this study
- The study was confined to a tertiary care hospital and so not represented the community. So, the results might not be generalized.

RECOMMENDATION

Further studies may be conducted in larger population including other parameters like serum AST, LDH, hemopexin, total bilirubin, transferrin and percent saturation of transferrin which may affect the serum iron level in preeclampsia.

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Original Article

Acceptability and Feasibility of Postpartum Intra Uterine Contraceptive Device Insertion in Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.

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Abstract

Worldwide intra uterine contraceptive device (IUCD) is a reversible method of contraception. Postpartum IUCD insertion is labeled when IUCD is inserted within 10 minutes to 48 hours of expulsion of placenta. The objective of the study was to analyze the acceptability and feasibility of immediate postpartum intrauterine contraceptive device (PPIUCD) in a tertiary care hospital of Bangladesh. A cross sectional study was conducted among eligible postpartum women at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka Bangladesh. Counseling was done about the procedure of PPIUCD in details. After having the consent, Cu-T 380A was inserted in 343 women. The women were followed up at six weeks after delivery. A total number of 18190 women were counseled during antenatal period and at labor ward. A total number of 6441 were admitted for delivery. Among the admitted patients, 343 accepted this method. Forty nine percent of the acceptors belonged to the age group of 25 – 30 years. Majority were from urban area and had studied up to secondary level. More women from the group who had undergone caesarean section accepted this method than the women who undergone vaginal delivery. Expulsion rate was 1.6% and removal rate 5.8%. Most common reason for removal was irregular per vaginal bleeding. The immediate PPIUCD method appeared to be a safe and effective method of contraception.

Keywords: *Postpartum intrauterine contraceptive device, PPIUCD, Postpartum*

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INTRODUCTION

Contraception means deliberate prevention of conception by any means be it drugs, technique or devices. In Bangladesh if we analyze use of different methods of contraception, oral contraceptive pill is highest in use.[1] But the drawback is that it needs to be taken daily and missing dose can result to pregnancy. There are other methods that does not require daily intake and failure rate is also low. Among them there are depot injection, implant, intra uterine contraceptive device (IUCD) etc. IUCD is easily available in Bangladesh but less commonly used.[2] It is a small T-shaped device placed in the uterus and its contraceptive action is 10-12 years. It can be removed at any time. Currently, in Bangladesh program is going on at the government and Non Governmental Organizational level on contraceptives including insertion of IUCD which is given as interval IUCD i.e. six weeks after delivery. But the user rate is relatively less due to lack of patient compliance. The reason may be the women need to contact with the family planning workers six weeks after child birth which is not always convenient for our women. From this point of view arises the concept of post partum IUCD (PPIUCD) where the IUCD is inserted into the uterus starting from 10 minute upto 48 hours after the birth of the baby.[3]

Multiple studies performed around the world have shown that adverse maternal, perinatal and infant outcomes are related to pregnancies spaced too closely. The risks are

particularly high for women who become pregnant very soon after a previous pregnancy, miscarriage or abortion.[4] The good news is that family planning enables women to achieve healthy intervals between births; potentially averting 25% to 40% of maternal deaths and reducing child mortality by an estimated 10%.[5,6] As many as 62% of women globally have an unmet need for contraception in the postpartum period.[7] So advice should be given on the use of a method which is long acting and can be adopted by the mothers immediately after childbirth. PPIUCD is a suitable method, free from risk, can be removed at any time. It can be given immediately after childbirth and can be used up to 12 years just like a permanent method relieving the worries and anxieties of future conception. American College of Obstetrics & Gynaecology(ACOG) supports immediate postpartum long acting reversible contraceptive (LARC) insertion(i.e., intrauterine contraceptive device before hospital discharge) as a best practice, recognizing its role in preventing rapid repeat and unintended pregnancy.[8] As PPIUCD insertion is done immediately after childbirth, so concern may arise regarding some complications like expulsion, infection etc.

From 2013, International Federation of Gynecology and Obstetrics (FIGO) has worked through the national societies globally to institutionalize the provision of postpartum IUD (PPIUD) services into routine maternity care. The project is being implemented in countries with relatively high fertility rates, unmet need for contraception and maternal mortality ratios. These include Tanzania, Kenya, India, Sri Lanka, Nepal and Bangladesh.

This project is implemented by Obstetrical and Gynecological Society in Bangladesh. PPIUCD insertion program is now going on in several health facilities of Bangladesh among which Bangabandhu Sheikh Mujib Medical University (BSMMU) is one of the centres. The aim of our study is to determine the acceptance rate of this method including analysis of acceptability and feasibility in terms of occurrence of expulsion or other complications.

MATERIALS AND METHODS

This cross sectional study was conducted from 1stJuly 2015 to 30th June 2018 in the department of Obstetrics and Gynaecology, BSMMU. Ethical clearance was taken from ethical society of the university. The patient were selected from those who got admitted to the obstetrics ward for delivery after fulfilling the inclusion and exclusion criteria. Inclusion criteria were woman who were counseled at antenatal clinic or in labor room for delivery per vaginally or by cesarean section and willing to participate in the study. Exclusion criteria were those unwilling to be included in the study, patient having anemia (hemoglobin <10gm/dl), having PPH during delivery, history of rupture of membrane more than >18 hours, obstructed labor, patient having congenital malformation of uterus, history of pelvic infection, jaundiceand allergy to copper.

At first counseling of the patients were done by the counselor at the time of antenatal visit about the advantages and disadvantages of different types of contraceptives. Later, PPIUCD method specific counseling was done. Those who failed to have antenatal counseling were subjected to intranatal counseling. After obtaining written consent, IUCD was inserted immediately (within 10 minutes) following delivery of placenta in cases of vaginal delivery with utmost precaution and aseptically into the uterus. In cases of caesarean section IUCD was inserted directly into uterine fundus after delivery of placenta followed by closure of uterine incision.

Follow up was done at 6 week of puerperium in the outpatient department of obstetrics &gynaecology, BSMMU. At that time symptoms and signs of any adverse effects like irregular per vaginal bleeding, excessive or foul smelling vaginal discharge, pain in the abdomen, dyspareunia were noted. Thread was also checked and if not found, ultrasonography of the lower abdomen was done. High vaginal swab for C/S and urine RME and C/S were done to those who complained of lower abdominal pain and excessive vaginal discharge. Women who came for follow up and want to remove the IUCD, reasons were meticulously noted in the questionnaires.All the relevant data were endorsed in the semi structured data collection sheets and analyzed using Statistical Package for Social Science (SPSS) software. Chi-squared Test (χ^2) was used to correlate the socio-demographic and obstetric characteristics of the parturient women. A p value of <0.05 was considered statistically significant.

RESULTS

From 1st July 2015 to 30th June 2018, a total number of 18,190 pregnant mothers attending the antenatal clinic and labor ward were counseled and 2079 patients agreedfor insertion of a PPIUCD. 6441women were admitted for delivery at the hospital. Among the admitted patients, a total 343 patients ultimately accepted the PPIUCD as method of choice. Acceptance of PPIUCD among the agreed patients is 16.5%. Acceptance rate among the delivered women is 5.3%.

Table I: Acceptance rate of PPIUCD (N=19,190)

Total number of counseled women	18, 190
Total number of agreed women	2079
Total number of delivered women at facility	6441
Total insertion of PPICUD	343
% of acceptance of PPICD among agreed women	16.5%
% of acceptance of PPIUCD among delivered women	5.3%

Forty nine percent of the acceptors belonged to the age group of 25 – 30 years (Fig. 1). Table II shows the sociodemographic characteristics of the women. Eighty percent of the women who delivered in BSMMU are from urban area. The acceptance rate is slightly more for urban(5.43%) than rural (4.88%) women. Acceptance rate is a bit less among university educated women. Muslim and employed women accepted this method more than other religion and unemployed one. Women of middle socioeconomic group accepted the method more(8%). Women having parity three accepted this method more.

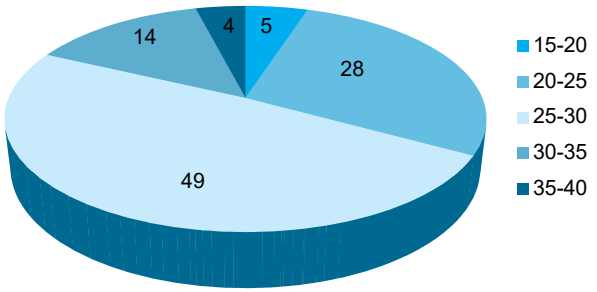

Figure 1 : Age distribution of patients (%)

Table II: Socio demographic and obstetric characteristics of the parturient women (N=343)

Variables	Accepted (N= 343) No. (%)	Declined (N=6098) No. (%)	Total N=6441 No. (%)	P -value
Locality				
Urban	280(5.43%)	4872(94.56%)	5152(80%)	0.433^{ns}
Rural	63(4.88%)	1226(95.11%)	1289(20%)	
Education				
No formal education	6(4.76%)	120(95.23%)	126(1.95%)	0.635^{ns}
Primary	91(5.16%)	1670(94.83%)	1761(27.34)	
Secondary	118(5.84%)	1900(94.1%)	2018(31.33)	
College	96(5.2%)	1744(94.8%)	1840(28.56)	
University	32(4.6%)	696(95.4%)	696(10.8%)	
Occupation				
Unemployed	279(5%)	5489(95%)	5768(89.5%)	<0.001*
Employed	65(9.6%)	609(90.3%)	674(10.5%)	
Socio Economic Status:				
Upper class:	36(3.8%)	905(96.1%)	941(14.6%)	<0.001*
Middle class:	274(8%)	3125(92%)	3399(52.8%)	
Lower class:	33(1.8%)	2068(98.4%)	2101(32.6%)	
Religion:				
Muslim:	317(5.7%)	5243(92.3%)	5560(86.3%)	<0.001*
Hindu	21(2.6%)	797(97.4%)	818(12.7%)	
Christian	1(1.6%)	62(98.4%)	63(.97%)	
Parity:				
Primi:	54(2.6%)	2034(97.4%)	2088(32.4%)	<0.001*
2 pregnancies	101(3.9%)	2494(96.1%)	2595(40.2%)	
3 pregnancies	188(10.1%)	1758(89.9%)	1758(27.3%)	

Figures in the parentheses indicate corresponding **percentage;**
Chi-squared Test (χ^2) was done to analyze the data**,** *significant, ns= not significant

In this study women who had Lower segment caesarean section(LSCS) accepted PPIUCD more than who had vaginal delivery (VD).Out of 343 PPIUCD acceptors, 300 insertion was done during LSCS and 43 after VD. Out of 343 patients, 308 (89.8%) patients reported for follow-up. Out of these, face to face follow-up was done in 264(86%) patients and phone follow-up was done in 44 (14%) patients (table III).

Table III: Acceptance of PPIUCD in relation to mode of delivery (N =343)

Mode of delivery	Number	Percentage
LSCS	300	87.46
Vaginal delivery	43	12.54
Returned follow up	308	89.8%
Face to face follow-up (N=308)	264	86%
Follow-up over telephone (N=308)	44	14%

Among the follow-up patients, 20 (6.5%) patients complained of irregular per vaginal bleeding, 12 (3.9%) patients had lower abdominal pain, 8 (2.6%) had excessive whitish per vaginal discharge. Upon vaginal inspection, Cu-T thread was identified in 116 patients but could not be seen in 148 patients. In those where threads were not found were advised for ultrasonography of lower abdomen which showed that in five patients it has been expelled out. So the expulsion rate is 1. 6% (table IV).

Table IV: Complications or complaints among recipients of PPIUCD at six weeks (N= 308)

Complications/complaints	Number	Percentage
Irregular bleeding	20	5.8%
Missing thread	143	41.69
Infection	0	0
Expulsion	5	1.46
Uterine perforation	0	0
Pain abdomen	12	3.5
Excessive whitish per vaginal discharge	8	2.3

Table V: Reasons for removal of PPIUCD (N=20)

Cause	Number	Percentage
Irregular per vaginal bleeding	10	50%
Pressure from family	5	25%
Pain abdomen, vaginal discharge, dyspareunia	2	10%
Desire to conceive	3	15%

Removal of IUCD was done in twenty (5.8%) patients. Most common reason (50%) was irregular per vaginal bleeding for long time. Other reasons were dislike by husband or mother-in-law, persistent lower abdominal pain, dyspareunia, profuse vaginal discharge and desire to conceive again (table IV).

Patients who complained of lower abdominal pain, excessive per vaginal discharge, irregular per vaginal bleeding were advised culture sensitivity of high vaginal swab but none of them revealed any bacterial growth. No perforation was found among the patients who returned for follow-up.

DISCUSSION

Women are highly motivated in postpartum period to initiate contraception. At this time they come in contact with health professionals and can be easily counseled. The total number of delivered women in BSMMU during the study period was 6441 among which 343 patients adopted PPIUCD method. So the acceptance rate among delivered patients is 5.3%. Jairajet al. conducted a study in Telengana, India and got 19.7% acceptance rate.[9] Kanhereet al. in their study conducted in Madhya Pradesh, India found 36% acceptance rate.[10] Mohamed et al. had similar study conducted in Assiut University, Egypt and there the acceptance rate was 28.9%.[11] Compared to those above mentioned studies, acceptance rate in our study is low. Possible cause may be this immediate postpartal insertion method is a new one in our country. Patientshave got various misconceptions and fear about the method. Reasons related to the facility could be that BSMMU is a tertiary care hospital and most of the patients comes with complications related to delivery and also the facility has limited number of bed, so all the patients who were counseled in the ante natal clinic could not be admitted here during their delivery time. So,

small percentage of counseled women had PPIUCD insertion.

The PPIUCD insertion rate is more among urban women (5.4%) and in employed group (9.6%) which is similar to the findings of Jairaj et al. Study of Sangeeta et al found acceptance is more in middle class family(39%), patient whose educational status is up to secondary level (23.3%), in primipara (5.9%) and after LSCS (43.9%)[9].In our study, acceptance is more in middle class family(8%), completion of secondary school (5.9%),after three pregnancy (10%) and following LSCS (5.7%). Mohamed et al. found that acceptance is more in lower socioeconomic group,mostly grand multipara and more than 45% had got no formal education.[11]

In our study, acceptance of this method is more after LSCS (87.46%) than vaginal delivery(12.54%).This is similar to observation by Doley et al.(LSCS-77.07%, VD-22.93%) and Gautam et al(LSCS-36.09%,VD-11.33%).[12,13] The reason may be the patients want a long acting method after LSCS and majority of the acceptors underwent LSCS.

Loss of follow up is a common feature in all the studies. It was 58% in a study done by Nayak et al.,40% by Verma et al. but in our study it is less than 10.2%.[14,15] Anita Makins et al. have studied in six countries at a time (Bangladesh, India, Nepal, Srilanka, Tanzania, Kenya)and found the follow up rate 52%.[16] Of them 49% were followed up face to face and 51% over telephone[16]. Though the follow up rate is high in our study but it is not due to either any complaints or complications. Reason of good follow up may be majority of acceptors (87.46%) had LUCS and had to come for their post surgical follow up.

In our study regarding the complaints, therewere irregular per vaginal bleeding in twenty patients (6.5%), lower abdominal pain in twelve patients (3.9%), and excessivewhitish vaginal discharge in eight patients (2.6%). There were no cases of PID. Jairaj et al. in her study has shown that 17.15% of her patients developed menstrual irregularity and lower abdominal pain.[9] Kanhereet al observed that 8% of her patients developed lower abdominal pain and 6% menstrual irregularity.[10] Kappa et al. had done systematic review of 15 articles on PPIUCD, they did not find any increase in risk of complications.[17] No perforations were recorded in our study. This is to be expected as the immediate postpartum uterus differs greatly from the non pregnant uterus, which is at known risk of perforation during interval insertion (1-7%) .[18] The large thick wall of the immediate postpartum uterus makes perforation highly unlikely.

Regarding the expulsion of the device in our study, it is very minimum only 1.6%. But Mishra et al. found it to be 6.4%, Goswamiet al. found it 22%.[19, 20] Studies done in six countries shows that the expulsion rate is 1.2% in Tanzania and 4.3% in Kenya.[16] The risk of expulsion depends on timing, technique and expertise of the care provider.[21] Immediate postpartum insertion (within 10 minutes) is associated with a lower risk of expulsion than early postpartum insertion (up to 48 hours). [3] In our study twenty patients (5.8%) voluntarily removed their device. The most common reason (50%) for removal was bleeding followed by pressure from family (25%) ; 10% had removal due to persistent lower abdominal pain, dyspareunia and profuse vaginal discharge, 15% patients removed their device for future conception. Doley et al. found bleeding (42.11%) and pressure fromfamily (17.54%) to be the most common reasons for removal.[12] Similar observationwas by Mishra et al. where bleeding (32.56%)was the most common cause for removal.[19] Whereas in a study by Goswami et al. the main reason for IUCD removal was pressure from husband and other family members.[20]

Limitations and challenges

Study was done at tertiary care hospital, which is in urban area, so the study populations are urban one. As this hospital has less bed, in proportion to outdoor patients, we could not admit all the agreed pregnant patients for PPIUCD during delivery. Some agreed patients had todeliver in other hospitals or at home andfailed to take PPIUCD method. So, number of insertion of PPIUCD isless in proportion to the agreed patients.

CONCLUSION

Insertion of IUCD in immediate postpartum period is an effective, safe and convenient contraceptive intervention in both caesarean and vaginal deliveries. The expulsion and complications are also less. The retention rate of IUCD is also good. But the acceptance rate is low. If health education, health promotion activities and counseling to family members including spouse and mother-in-laware vigorously done,

acceptance may increase. Some misconception and fear of the patients about IUCD should be removed by proper counseling. Strategies to improve the insertion of PPIUCD, Government can take role in improving awareness about this method through different media sources. Antenatal counseling for family planning including PPIUCD andInstitutional delivery rate should be increased, so that PPIUCD and other family planning method can be given. Neonatal health services should be increased, so that perinatal mortality decreases and mothers can seek family planning methods with out worry. Female empowerment should be encouraged which will increase their decision making power about limitation of family. It is also important to train up the doctors, midwifes and other health care providers about the knowledge and skills of insertion of PPIUCD and follow up. This will further increase the rate of PPIUCD insertion and decrease the rate of expulsion. Follow up of the patients shouldalso be increased, so that more information about the complications and safety can be collected.

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Original Article

Pattern of Adverse Cutaneous Drug Reactions (ACDR) to Systemic Drugs

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Abstract

Adverse cutaneous drug reaction (ACDR) is a common issue in dermatology practice and it is crucial for every medical practitioner to remain updated of its pattern. It was a hospital based crosssectional observational study, conducted over 130 patients with adverse cutaneous drug reactionin the outpatient department of dermatology of Bangabandhu Sheikh Mujib Medical University (BSMMU). Majority of reaction was developed within one week of taking drug. Fixed drug eruption (FDE) was present in 18.5% cases followed by maculo-papular, Stevenson-Johnson-Syndrome-Toxic epidermal necrolysis (SJS-TEN), urticaria, urticaria + angioedema, lichenoid drug reaction, erythema multiforme, acneiform eruption, exfoliative dermatitis, pityriasiform, hyperpigmentation, acute generalized exanthematous pustulosis, drug induced hypersensitive syndrome, vasculitis, purpura, photosentivity, psoriasiform and other non-specific reactions. Anti convulsants (26.9%), NSAIDs (20.0%) and anti amtimicrobials (17.7%) are the most common drug group causing adverse cutaneous reaction. Many of the ACDR caused by anticonvulsants, NSAID and antimicrobials are even life threatening.

Key words: *ACDR, drug reaction.*

INTRODUCTION

Adverse drug reaction is defined as "Any response to a drug which is noxious and unintended which occurs at doses normally used in man for prophylaxis, diagnosis, or therapy of disease, or for the modifications of physiological function".[1] In every day practice physicians face different unwanted response of medicines they prescribed for patients in hospitals. Globally ADR is the cause of hospital admission in roughly 5.8%.[2] Skin is one of the most important sites to be affected with adverse drug reaction.[3]

The frequency, type and extent of drug reaction are variable from drug to drug.[4] In past studies it was reported that 7–11.2% of ADRs result in hospitalization.[5-7] Every year so many new drugs are included in the prescribing list and the prescription pattern are changing as well as physicians are facing newer adverse events on their patients. So it is important to update the current trend of drug reaction.

The incidence of ACDR varies from 3.31-16% in hospital admitted patients.[8-9] but such data of out-patients are scarce. Cutaneous adverse drug reactions (CADR) are the commonest ADR (30.45%) and responsible for about 2% of hospital admissions.[10-11] The current study was carried out to see the pattern of cutaneous drug reactions in BSMMU hospital.

MATERIALS AND METHODS

In the current hospital-based cross-sectional observational study 130 patients with adverse cutaneous drug reaction were studied who were recruited from the outpatient department of dermatology of Bangabandhu Sheikh Mujib Medical University (BSMMU). Cases with history of taking vaccine, any unknown drug, homeopathy, herbal, Ayurveda and reaction due to over dose were excluded and only those giving informed written consent with history of taking prescribed drugs were enrolled. Each patient was examined by one or all authors. Detailed history (age, sex, primary disease or condition for which the suspected drug was taken, suspected drug, time taken to develop reaction after drug taken, dose of drug, duration of drug taken, use of herbal or homeopathy or home remedy, previous drug reaction, re-exposure to a drug and exacerbation of eruption, changes after drug stop or decreasing the dose, other systemic disease, family history of drug reaction and contact with any chemical or physical agents) was taken and physical examination was done. Venous blood was

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taken for hematological (complete blood count) and biochemical tests (Urine for routine analysis, serum creatinine, SGPT, blood sugar and serum electrolyte). The type, extent (total surface area, mucosal or internal organ involvement) of adverse cutaneous drug reaction was diagnosed by the expert team mostly according to morphology of the lesion and skin biopsy (if needed).Where more than one drug was suspected the mostly suspected drug was noted and was confirmed according to reduction of reaction after withdrawal.

RESULTS

Among patients with drug reaction 11.5% were under age 20 years, 23.9% from the age group 21-40 years, 27.7 % from 41-60 years group and 34.6% above the age 60 years. Mean age was 45.2±1.3 with a range from 2 to 74 years (table I).

Table I: Age distribution of the patients (n=130).

Age	Frequency (%)
<20 years	18(11.5)
21-40	31(23.9)
41-60	36(27.7)
>60	45(34.6)
Total	130(100.0)

Mean (range): 45.2±1.3 (2-74)Adverse cutaneous drug reaction was seen in 42.3% male and 57.7% female patients; male female ratio was 1:1.4. In 28.5% cases drug reaction was developed within one day of drug consumption, 59.2% developed between one day to one week and 12.3% developed after one week (Table II).

Table II: Onset of reaction following drug intake (n=130).

Onset (Day)	Male (%)	Female (%)	Total (%)
1	17(13.1)	20(15.4)	37(28.5)
2-7	31(23.8)	46(35.4)	77(59.2)
>7	7(5.4)	9(6.9)	16(12.3)
Total	55(42.3)	75(57.7)	130(100)

Fixed drug eruption (FDE) was present in 18.5% cases, other offending types of reactions were, maculo-papular (9.2%), SJS-TEN (6.9%), urticaria (8.5%), urticaria + angioedema (4.6%), lichenoid drug reaction (5.4%), erythema multiforme (7.7%), acneiform eruption (6.9%), exfoliative dermatitis (5.4%), pityriasiform (4.6%), hyper-pigmentation (1.5%), acute generalized exanthematous pustulosis (2.3%), drug induced hypersensitive syndrome (4.6%), vasculitis (1.5%), purpura (2.3%), photosentivity (2.3%), psoriasiform (1.5%) and other non-specific reactions (6.2%) (Table III).

Table III: Type of drug reaction (n=130).

Type of drug reaction	Frequency (%)
FDE	24 (18.5)
Maculo-papular	12(9.2)
SJS-TEN	9(6.9)
Urticaria	11(8.5)
Urticaria + angioedema	6(4.6)
Lichenoid	7(5.4)
Erythema multiforme	10(7.7)
Exfoliative dermatitis	7(5.4)
Hyperpigmentation	2(1.5)
Pityriasiform	6(4.6)
Acute generalized exanthematous pustulosis	3(2.3)
Acneiform eruption	9(6.9)
Drug induced hypersensitive syndrome(4+2)	6(4.6)
Vasculitis	2(1.5)
Purpura	3(2.3)
Photosentivity	3(2.3)
Psoriasiform	2(1.5)
Non specific	8(6.2)

Anti-convulsant (26.9%), NSAIDs (20.0%) and antimicrobials (17.7%) are the most common drug group causing adverse cutaneous reaction. Other offending drugs include allopurinol (6.2%), sulfasalazin (2.4%), dapsone (0.8%), antihypertensive (3.9%), systemic corticosteroid (6.9%), anticancer drugs (6.2%) and others (9.2%).

Table IV: Drugs causing adverse cutaneous reaction (n=130).

Name of drug		Frequency (%)
Anti-convulsants (Carbamezepine, Phenytoin, Phenobarbital)	FDE 3 (2.3) Maculo-papular 5(3.8) SJS-TEN 5 (3.8) Hypersensitive syndrome 4(3.1) Exfoliative dermatitis 3 (2.3) Pityriasiform 6 (4.6) Urticaria 2 (1.5), Urticaria+angioedema 2 (1.5) Vasculitis 2(1.5) Erythema Multiforme 3(2.3)	35(26.9)
Paracetamol and NSAIDs (naproxen, ibuprofen, tramadol, indomethacin, ketoprofen, diclofenac)	FDE 8 (6.2) Maculo-papular 2(1.5) Exfoliative dermatitis 2(1.5) EM 3(2.3) Acute generalized exanthematous pustulosis 2(1.5) Lichenoid 3(2.3) Urticaria+angioedema 2(1.5) SJS-TEN 2(1.5) Psoriasiform 2(1.5)	26(20.0)
Anti-microbial agents (Ciprofloxacin, Amoxicillin, Cotrimoxazol, tetracycline, Doxicycline, Metronidazole and Anti-TB drugs)	FDE 5(3.9) Maculo-papular 3(2.3) Photosentivity 2 (1.5) SJS-TEN 2(1.5) Urticaria 1(0.8) hypersensitive syndrome 2(1.5) Erythema multiforme 2(1.5) Acute generalized exanthematous pustulosis 1 (0.8) Nonspecific 2(1.5) Purpura 1(0.8) Hyperpigmentation 2 (1.5)	23(17.7)
Allopurinol	FDE 3(2.3) Urticaria 2(1.5) Maculo-papular 2(1.5) Nonspecific 1(0.8)	8(6.2)
Sulfasalazin	Erythema multeforme 2(1.5) Exfoliative dermatitis 1(0.8)	3(2.4)
Dapson	Exfoliative dermatitis 1(0.8)	1(0.8)
Antihypertensive	Lichenoid 2(1.5) Photosensitivity 1(0.8) FDE 2(1.5)	5(3.9)
Systemic corticosteroid (Prednisolone, Deflazacort and Injection Triamcinolone) anti-cancer drugs Others	Acneiform eruption 9(6.9) Purpura 2(1.5) Urticaria 5(3.8) Non-specific 1(0.8) Urticaria 1(0.8) FDE 3(2.3) Lichenoid 2(1.5) Urticaria+angioedema 2(1.5) Non-specific 4(3.1)	9(6.9) 8(6.2) 12(9.2)

FDE: Fixed drug eruption, NSAIDs: Nonsteroidal anti-inflammatory drugs, SJS-TEN: Stevens-Johnson syndrome-Toxic epidermalnecrolysis.

DISCUSSION

Among patients presented with adverse cutaneous drug reaction (ACDR) mean age was 45.2 ±1.3 years; majority was of age above 60 years. Youngest patient was 2 years age and oldest one was 74. This is in accordance with previous studies.[12-13] People of advanced age need to take more daily medications and incidence adverse drug reactions are more among them.[14] Some studies found lower age groups as common sufferer.[15] Male female ratio was 1:1.4 as no sex difference of drug reaction was found in previous studies.[12-13] Though some studies found female as predominant sufferer of ACDR.[16-17]

Most of the ACDRsappeared between one to seven days. In a series by Jonardan and Shailendra, average time of development of reaction was four days.[18] Most common type of drug reaction was fixed drug eruption (FDE) mostly caused by NSAID (table III and IV) which is in accordance with previous study.[19] In some previous studiesmaculopapular rash was found as the commonest type (67.7%).[12,20-21]

In a previous study by Jonardan and Shailendra, urticarial drug reaction was found in a higher rate whereas in the current study urticaria found in 8.5% and urticaria + angioedema in 4.6%.[18] In an Iranian study acute urticaria was the most common clinical presentation (59.2%)[22].In another study urticaria and FDE was the commonest pattern.[23] In the current study SJS-TEN was found in 6.9% cases which is closer to the previous studies.[12, 24-25] Acneiform eruption was found in both male and female patients and all were with history of use systemic corticosteroid (6.9%). Mahatme and Narasimharao found acneiform reaction in 10% cases in both male and female caused by oral contraceptives, isoniazide and prednisolone.[26] Lichenoid drug reaction was found in 5.4% developed with antihypertensive and NSAIDs, previously Mahatme and Narasimharao; and Mahapatra and Keshri, found lichenoid reaction in 3-4% cases due to NSAID and hydroxichloroquin.[26-27] Erythema multiforme was found in 7.7% whereas in previous studies EM found in 0.4% to 4.15%.[18,27-28] Anticonvulsant (26.9%) is the commonest group of drug followed by NSAIDs(20.0%) and anti-microbials (AMA) (17.7%). Anticonvulsants (Carbamezepine, Phenytoin, Phenobarbital) was frequent culprit drug for ACDR in earlier studies[18-26].In a study by Chaterjee et al common agents were antimicrobials (34.10%), anticonvulsants (32.88%), anti-inflammatory drugs (21.51%).[23] Antimicrobials was the leading cause of ACDR in study by Mahatme and Narasimharaofound[26].Aamong the patients taken anticonvulsants (Carbamezepine, Phenytoin, Phenobarbital) more faced more severe reactions like SJS-TEN, hypersensitive syndrome and exfoliative dermatitis.Three patients developed acute generalized exanthematous pustulosis (AGEP) due to NSAID (naproxen and diclofenac) and antibiotic (amoxicillin + clavulanic acid). In the study by Mahatme and Narasimhara2% had AGEP due to amoxicillin + clavulanic acid.[25] Exfoliative dermatitis was developed in seven (5.4%) patients due to carbamezepine(3), diclofenac (1), tramadol (1), sulfasalazine (1) and dapson (1). In a study by Talib et al, 8.2% developed exfoliative dermatitis.[12]

CONCLUSIONS

Commonly used drugs are associated with different adverse cutaneous drug reactions. Among them some are life threatening and disabling. It is important to be remain updated about potential adverse effects.

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Case Report

Evans Syndrome: A Case Report

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Abstract:

Evans syndrome, a combined clinical condition of autoimmune haemolytic anaemia (AHA) and idiopathic thrombocytopaenic purpura (ITP) and has non-specific pathogenesis. The clinical cases are extremely rare, since only 4% of AHA or ITP are incorporated with Evans. It is distinguished from differentials, such as lupus, IgA deficiency, and acquired immunodeficiency, by peripheral blood film, bone marrow, Coombs test, and coagulation profile. A case of adult female from Pabna, Bangladesh is documented in this report. She complained of high grade intermittent fever, exertional dyspnea, icteric skin and sclera. Other features included mild splenomegaly, dark urine, and profuse sweating after fever. Investigation reports were consistent with AHA and ITP, with normal coagulation and viral profile. However, the patient was treated with corticosteroids, platelet and blood transfusion. And in follow-up visits, there was a pattern of gradual decline in erythrocyte sedimentation rate (ESR) and reticulocyte count, with normalization of haemoglobin, red cell, and white cell count. No association with other diseases was found in this case.

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INTRODUCTION

Evans syndrome is an uncommon clinical condition defined by the combination of autoimmune hemolytic anemia (AHA) and idiopathic thrombocytopenic purpura (ITP).[1] It is a chronic immune- associated disease which has unknown pathophysiology. The true Evans syndrome is diagnosed when possibility of other confounding disorders is excluded. In 1951, Dr. Robert Evan discovered the spectrum like relationship between these two combined diseases after studying twenty-four cases.[1] Epidemiologically, the condition is extremely rare that only less than 4% of ITP or AHA are diagnosed as Evans syndrome.[2-5] There is evidence of both cellular and humoral immune-abnormalities in Evans syndrome.[6] Different scientists provided different types of hypothesis, but the exact disease mechanism is still unknown. However, clinic patients present more neutropenia than pancytopenia.[1,3,5] Secondary cytpoenia can occur later, which may delay the management.[5] There are presentations of anemia and thrombocytopenia, both combined with organomegaly and lymphadenopathy in chronic cases.[3,4,8] Blood count, peripheral blood film (PBF), bone marrow, Coombs test, BT,CT, PT and APTT are usual laboratory investigations for Evans syndrome. (6) To diagnose Evan syndrome finally, differentials like systemic lupus, IgA deficiency, and acquired immuno-deficiency should be excluded. Autoimmune lymphopro-liferative syndrome (ALPS) is another noteworthy differential of Evans syndrome.[8] In options of treatment, corticosteroids are considered as the first line therapy for the disease along with washed RBC and platelet transfusions.[3,5,7] Immunosuppressive agents (e.g. Ciclosporin), danazol, splenectomy, therapeutic antibodies (e.g. Rituximab), azathioprine etc. are used as the second line therapy.[6] As the third line therapy, which is usually not needed, cyclophosphamide or alemtuzumab can be prescribed. [7, 9-11] Even so, after the treatment, prognosis is not satisfactory. Relapse and remission of both ITP (more common) and AHA is seen in most of the cases. Follow-up showed limited data on long term survival. [6]

CASE REPORT

A 29-years-old normotensive non-diabetic married woman hailing from Chatmohor, Pabna was admitted in Bangabandhu Sheikh Mujib Medical University, Dhaka

on November 2, 2014. She had the complaints of fever for ten days with palpitation. She had generalized weakness and shortness of breath (SOB) for the same duration. Fever was high grade and intermittent, with a highest recorded temperature of 103°F. SOB was more marked during exertion and relieved by taking rest. Fever used to come with chills and rigor and subsided spontaneously with profuse sweating. She had also complaints of yellowish discoloration of skin, sclera, and passing of dark color urine for seven days. There was no history of contact with smear positive tubercular patient. There were absence of photosensitivity, oral ulcer, dysuria, chest pain, hematuria, and any bleeding manifestations. There was no significant recent history of travelling. On general examination, the patient was severely anemic and mildly icteric. There was no leukonychia, koilonychia, cyanosis, or clubbing. Lymphadenopathy, thyromegaly, and bony tenderness were absent. Systemic examination reveals only mild splenomegaly.

Table I shows the hematological changes in the investigation results of the patient. During that time, the patient was treated with corticosteroids therapy, platelet, and blood transfusions. White blood differential counts were variable in those time intervals. MCV (Mean Cell Volume), MCH (Mean Cell hemoglobin), MCHC (Mean Cell Hemoglobin Concentration) were mostly within the reference value in all reports. Reticulocyte counts were always high above normal, but came to normal after long term treatment. Peripheral blood film (PBF) was done both during diagnosis and followup. In PBF, Red cells were always dimorphic. Sometimes red cells were associated with anisocytosis, ovalocytosis, polychromatic cells, target cells, pencil cells, and elongated cells. White cells were mature during the treatment course with occasional myelocytes.

Bone marrow examination was done in 3rd and 10th visits. During the 3rd visit, the marrow was normocellular with normal myeloid/erythroid ratio. There were features of megakaryocytic hyperplasia (increased in number and some displastic change) only. There were active micronormoblastic erythropoiesis and active granulopoiesis. But in the 10th visit, after giving stimulant agents, there was hypercellularity and increased myeloid/erythroid ratio. Erythropoiesis was hyperactive and dimorphic. Granulopoiesis was hyperactive too. Megakaryocytes were same like the 3rd visit. So, there were both erythroid hyperplasia and megakaryocytic hyperplasia in the last report. Lymphocytes, plasma cells were normally seen and abnormal cells were absent. Direct coombs test was found positive on the 2nd visit. Systemic lupus erythematosus (SLE) and autoimmune diseases were excluded after negative results of anti-nuclear antibody (ANA) and thyroid function tests (TFTs). ANA was done again two months later to re-confirm the absence of SLE. Coagulation profile was done too.

BT, CT, PT and APTT were normal. Her HIV, HCV, VDRL, HBsAg, AND dengue titre were negative.

Liver function tests and an ultrasound of whole abdomen with hepatobilliary system were carried out in the first visit. In that time, total serum bilirubin was 66.4 pmol/l (reference value: 5-20 pmol/l), Lactate dehydrogenase (LDH) was 420 U/L (reference up to: 400 U/L), Creatinine 1.1 mg/dl (reference: 0.6 - 1.3 mg/dl),

Table I: Changes in hemogram during the course of treatment and revisit

	Date of investigations										
	1st visit 2 Nov, 2014	2nd visit 5 Nov, 2014	3 rd visit 8 Nov, 2014	4th visit 15 Nov, 2014	5th Visit 6 Dec, 2014	6th visit 30 Dec, 2014	7th visit 5 Jan, 2015	8th visit 8 Jan, 2015	9th visit 12 Jan, 2015	10th visit 14 Jan, 2015	11th visit 18 Jan, 2015
Hemoglobin (gm/dl)	2.5	6.5	9.4	10.8	8.4	6.0	3.3	8.3	9.1	10.2	10.4
ESR (Westergren)	160	115	20	10	65	135	135	70	25	10	15
RBC count ($x10^{12}$/L)	0.84	2.14	3.10	3.63	3.03	2.25	1.27	3.26	3.50	3.90	3.82
Platelet count ($x10^9$/L)	18	180	15	150	350	24	05	50	70	70	10
WBC ($x10^9$/L)	5.0	7.0	5.0	3.0	8.5	7.0	1.50	2.00	1.00	1.20	14.00

direct/conjugated bilirubin 6.7 pmol/l (reference: 0-4 pmol/l). There was no thyroid dysfunction and primary immune deficiency as per investigation. X-ray chest was normal. Ultrasound showed hepatosplenomegaly with homogenous and uniform pattern. There were no anatomical abnormalities in other organs. Random plasma glucose was found within normal limit, tested in the first and last visit. Blood electrolytes were explored during 8th visit and found normal.

In summary, patient had thrombocytopenia evidenced by reduced platelet count in blood, increased megakaryocytes, and absent neutropenia in bone marrow. It was idiopathic in nature because collagen disease, liver disease, acute or chronic infections, and other causing factors were absent. Splenic abnormality was unlikely as there was mild splenomegaly. Further, patient had anemia (low hemoglobin level showed in Table 1). Raised unconjugated bilirubin and LDH level reflected it as a hemolytic anemia.

So, combination or co-existence of autoimmune hemolytic anemia (AHA) and idiopathic thrombocytopenic purpura (ITP) diagnosed the cased as Evans syndrome.

DISCUSSION

It has been more than fifty years since Dr. Evan discovered the rare combination of AHA and ITP.[1] Though two diseases are merely idiopathic, their rare combination expects to have an underlying reason in 70% of the adult patients. (12) Graft versus host reaction or transplantation of blood progenitor cells is one of the causes of Evans syndrome. [13, 14] Sometimes Evan syndrome is associated with systemic lupus erythematosus (SLE), Sjogrens syndrome, immune deficiency, leukemia, and lymphoma. [4, 12] Even, metastatic small cell lung carcinoma was also reported in Evans syndrome. (15) However, we did not find any association of the conditions with our reported case.

Our Evans syndrome patient had fever, palpitation, SOB, chills rigor, weakness, sweating, yellowish skin- sclera, anemic pale color, and dark colored urine. The literature shows petechiae, bruising, and mucocutaneous bleeding can be present is Evans syndrome, which was absent in our case.[3,4,8] Examination may reveal hepatomegaly, splenomegaly, lymphadenopathy, and any other organomegaly in chronic or intermittent manner as per previous studies.[3,4,8] But, our patient only had hepatomegaly and mild splenomegaly.

Patient's full blood count and peripheral blood film were investigated routinely for several times. There were features of autoimmune hemolytic anemia. Underlying malignancies, microangiopathic hemolysis, hereditary hemolytic or thrombocytopenic conditions were excluded. Ongoing hemolysis was confirmed by increased reticulocytes, raised unconjugated bilirubin, and low haptoglobin levels. These are the confirmatory investigations, also done in previous reported cases. [3-5, 7, 16] It is claimed that thrombocytopenia in Evan syndrome may be followed by neutropenia, and pancytopenia.[5] However, our patient had pancytopenia at the first visit. After weeks, red and white cell count could be recovered by a course of treatment but thrombocytopenia was recurrent.

Septic shock, ischemic heart disease, cerebral ischemic attack, refractory anemia, and intracranial hemorrhage can be the fatal sequels of Evan syndrome.[10] Though our patient did not progress in any of the fatal outcomes, her condition was not satisfactory at all. It was relapsing and refractory. It is known that treatment for Evan syndrome is very challenging. As described before, there are first line, second line, and third line therapies. We treated the patient with blood transfusion, platelet infusion, corticosteroids (prednisolone) that made the patient better for a few days. But the condition was recurrent, signified by hemoglobin and platelet counts in Table 1.

CONCLUSIONS

Evan syndrome is a rare chronic disease and has non-specific pathogenesis. Patient under study was treated with blood transfusion, platelet infusion and corticosteroids, but the response was not satisfactory and it was assessed by follow-up haemoglobin and platelet count. The patient did not progress in any fatal condition. Large patient surveys, more drug control trials and correlation of international databases for fruitful management of Evans syndrome would be assured for the unique management.

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Case Report

Painful, Tender Loin Mass is an Atypical Presentation of Perforation of Retrocaecal Appendix - A Case Reoirt

*Hossain MM[1], Mizan M[2], Maruf M[3], Jabed M[4], Ulla MSS[5]

Abstract

Right painful, tender loin mass is an unusual presentations of acute appendicitis that arises difficulty in surgical practice. This "case of right painful, tender loin mass results from perforation of retrocaecal appendix with known case of diabetes mellitus patient 50 years old age. This case facilitates the significance of contrast for abdominal computerized tomography scan for critically ill patient.

Keywords: *Appendicitis, loin abscess, computerized tomography scan*

INTRODUCTION

Appendicitis is disease frequently encountered in surgical practice, painful loin mass is a one of the unusual presentations that's results from perforation of retrocaecal appendix. Appendicitis it is usually diagnosed and managed easily with a low morbidity and mortality; However, a missed diagnosis can sometimes lead to life-threatening complications.

CASE HISTORY

A 50-year-old male diabetic admitted into the Emergency department at Dhaka Medical College Hospital with a one-month history of right loin pain and a couple week history of skin redness and also swelling for same time. There was no abdominal symptoms but history of slight loss of appetie and loss of weight about 3-4kg over the last 3 months. Past medical history was positive for osteoarthritis and lower limb atherosclerotic occlusive arterial disease. The patient was taking Cardiovascular drugs valsarten, ace inhibitor, statin group and no history of hypersensitivity to drugs or foods. Vital signs were normal. Abdominal and rectal examinations were not remarkable. There was a 4x4 cm painful, tender loin mass evident in the right lumbar region.

Hematological investigations revealed an leucocytosis, WBC 19.9 cumm/dl, glucose 18 mmol HbAlc 11, albumin 30 mg/dl, ESR 70 and CRP 360, Urea 40 mg/dl, other blood and urine tests and plain x-rays of the chest and abdomen were normal. Intravenous ciprofloxacin, erythromycin and a glucose/ potassium insulin infusion were commenced. Contrast abdominal CT-scan showed that a inflam¬matory mass with surrounding fat stranding and also showed that there was communication through lumbar triangle to sub-cutaneous tissue and air-fluid level was identified also.

Figure 1: An inflammatory retrocaecal mass, with surrounding fat stranding. Gas bubbles are evident in the lumbar musculature.

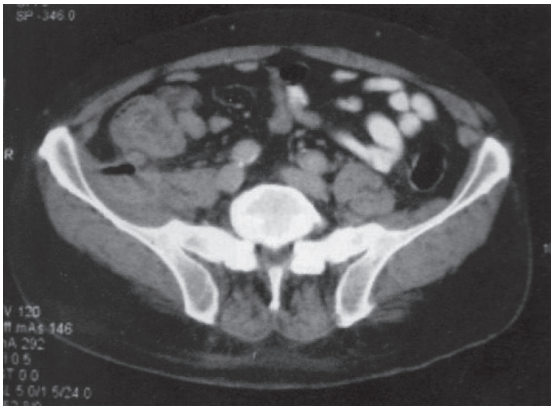

Figure 2: An air-fluid level within the lumbar musculature

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*For corrcspondence

During Operation, here was no intra-abdominal contamination. Perforated retrocaecal acute appendix was found. Appendicectomy was done. Peritoneal cavity wash was given with warm normal saline. Abdomen was closed layer by layer than drain tube was kept in situ. An abscess cavity and tract was seen to extend posteriorly through the lumbar musculature into the subcutaneous tissues, the tract extending to the retro peritoneum was debrided and curetted and the wound left open. Appendices was sent for histopathological exam and sub sequently pus was sent for culture and sensitivity the separately submitted skin and debrided subcutaneous tissue was sent for confirmation of the infection. Intravenous metro¬nidazole was added to the antibiotic regimen.

Microbiology revealed that alight growth of gram negative rods and moderate growths of Gram positive cocci and anaerobes. Histopathology showed that appendicitis with suggestive fat necrosis and also showed that extensive acute and chronic inflammation, with focal abscess formation and widespread fat necrosis.

The patient made an uneventful recovery. He was reviewed by the diabetic specialist and commenced on an oral hypoglycaemic agent. The significant loin wound was dressed with a VAC device (Figure 3). The patient made a full recovery.

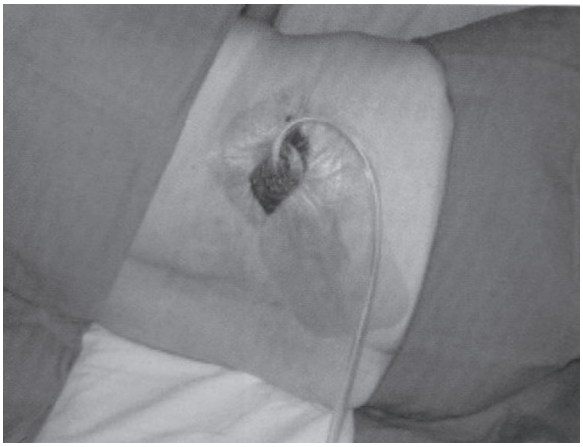

Figure 3: Vacuum assisted closure device in place illustrating the site

DISCUSSION

This case was presented with three atypical features, which make the diagnosis difficult: the patient's age, the protracted clinical course and the absence of abdominal signs. Radiological investigation with abdominal CT greatly assisted diagnosis.

Appendicitis is infrequent in patients over 50 years of age, although the incidence in the elderly is reported to be increasing.

This patient had a three-month history of anorexia and weight loss. Presumably these symptoms are explained by the presence of diagnosed diabetes. The likely onset of appendicitis was one-month ago, prior to admission when the patient first developed right loin symptoms. The patient had no abdominal symptoms at that time, presumably due to the localisation of the perforation into the lumbar musculature.

Literature reveals several unusual presentations of retrocaecal appendicitis including perirenal abscesses and very rarely as an appendico-cutaneous fistula, thigh abscesses. Although necrotising fasciitis is rarest one of the most complication but it may predesposes in DM patient, drugs, malnutrition and immunocompromised. In this case, our patient was presented with known case of diabetes mellitus.

Morbidity in acute appendicitis depends on time of diagnosis time, type of presentations to delay of diagnosis leading to perforation, and this can often occur as a result of atypical presentation. As mortality in acute appendi¬citis increases six fold with perforation, and as complications are twice as likely in the elderly, the favorable outcome in this case is gratifying. This was greatly facilitated by CT scanning, which was a major adjunct to prompt diagnosis. This investigation should be considered in high index of suspicion in or around the abdomen. Report that this case with abcess formation may be helpful for diagnosis and treatment of pt because this the natural passege or way of communication for spreading of intra-abdominal infection to subcutaneous tussue of posterior wall. Early recognition of an abdominal source of sepsis with appropriate treatment can improve survival.

CONCLUSION

Right loin abscess is one of the differential diagnosis of spreading cellulitis in or around the abdomen. The present case emphasizes the advantage of abdominal CT in an elderly patient as an atypical presentation of acute appendicitis with no abdominal symptoms.

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Obituary News September - 2018

BMA would like to express deep condolence on deaths of the following notable physicians in recent past:

Sl. No.	Name	Age	Name of District	Date of Death
1	Dr. Firoz Al Hasan Fahim	30 Years	Sirajganj.	14/06/2018
2.	Dr. Ruhul Amin	-	Sylhet	30/062018
3	Dr. N.H.A. Koreshi	-	Sylhet	14/07/2018
4	Dr. Uliam Lusae	-	Banbarban	16/072018
5	Dr. Md. A.K.M. Fazlul Hoque	-	Naogaon	17/07/2018
6	Asma -Ul –Mahfuz Student of 5 years, Dinajpur Medical College.	-		
7	Mrs. Hosne Ara Begum Coreligionist of Shahid Dr. Shamsuddin Ahmed	-		

May Allah bless the departed souls.Our heartiest commiseration to the deceased's family, our prayers are with them during this difficult moment of their life.

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