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Editorial

Management of Ovarian Cyst in Postmenopausal Women

Sartaj Begum[1]

Ovarian cysts are common in postmenopausal women and most are noncancerous. However, studies have estimated the incidence to be between 3% and 18%.[1] The greater use of ultrasound in gynaecological practice and the widespread generalised use of other imaging techniques, an increasing proportion of these cysts will be found incidentally. Cystic lesions in postmenopausal ovaries should only be reported as ovarian cyst and considered significant if they are 1 cm or more in size. Cystic lesion less than 1 cm are clinically not significant and do not need follow-up.[2]

The vast majority of these identified cysts are benign. However, as the greatest risk factor for ovarian cancer is age, any cyst in postmenopausal women should be taken seriously. The features of a benign or malignant ovarian cyst can often be seen with an ultrasound. A solid ovarian cyst with papillary projection, complete septation and ascites has a higher probability of being malignant.[3] On the other hand simple cysts are round an oval shape, thin wall, anechoic fluid and absence of septation or nodules. Benign cyst can also be determined by a color doppler measuring the resistive index. When the resistive index is normal in both ovaries there is a high probability that the cyst is benign.[4]

Ovarian cancer is more likely to be found in women who have genetic predisposition to ovarian cancer (family history of ovarian or related cancer) previous history of breast or gastrointestinal cancer. Ovarian cyst may be either symptomatic or asymptomatic.[5] Women with symptoms from ovarian cyst typically experience pain or pressure in the lower abdomen on the side of the cyst. Pain may be dull or sharp, it may be constant or intermittent.

Thorough medical history should be taken from the women with specific attention to the risk factor and symptoms suggestive of ovarian malignancy and a family history of ovarian, bowel or breast cancer. A full physical examination is essential including body mass index (BMI), abdominal examination to detect any palpable mass or ascites and also pervaginal examination.

Ovarian cyst can sometimes detected during a pelvic examination, although an imaging test, usually a pelvic ultrasound e.g. transvaginal ultrasonography (TVS), the single most effective way to evaluate ovarian cyst in postmenopausal women along with doppler flow ultrasonography to confirm the diagnosis.[6] Some blood tests are recommended for diagnosis of ovarian cyst. CA125 is the only serum tumor marker used for primary evaluation as it allows the RMI of ovarian cyst in postmenopausal women to be calculated.[7]

It is recommended that a risk of malignancy index RMI 1 that include serum CA125 level (iu/ml) the menopausal status (M) and an ultrasound score (U) as follows RMI = U x M x CA125, should be used to guide the management of postmenopausal women with ovarian cysts, as an effective way of triaging those women who are at low or high risk of malignancy.[8]

Regarding management, postmenopausal women with ovarian cyst (1cm or more), measure CA125, trans-vaginal ultrasonogram or trans-abdominal and calculate RMI. If RMI less than 200 indicates low risk of malignancy. If the cyst is asymptomatic, simple <5 cm, unilocular, unilateral then consider conservative management and repeat assessment in 4-6 months (CA125, TVS) and watchful waiting may be an option for one year and if any change occurs consider intervention.

If the cyst is symptomatic, non-simple, more than 5 cm, multilocular, bilateral then consider salpingo - oophorectomy (bilateral). RMI ≥ 200 (increased risk of malignancy) then needs CT scan of abdomen and pelvis and referred to the gynecological oncology MDT (multidisciplinary team) review. If MDT review recommends high likelihood of ovarian malignancy, then laparotomy should be done by trained gynecological oncologist with full staging procedure. If MDT review shows low likelihood of ovarian malignancy then laparotomy or laparoscopy followed by TAH with BSO, omentectomy and peritoneal cytology by a trained gynecologist.[7]

Cyst of any size or ovarian abnormality should not be ignored in postmenopausal women. All of them need some type of follow-up. TVS-TAS is recommended for assessment along with CA125.

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Original Article

Locking Plate Fixation in Distal Tibial Fracture - A study of 30 cases.

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Abstract:

Background: Distal tibial fractures are difficult to manage. Open reduction and internal fixation in distal tibial fractures jeopardizes fracture fragment vascularity and often results soft tissue complications. Minimally invasive osteosynthesis, if possible often the best possible option as it permits adequate fixation in a biological manner. The nature of the limitations for traditional plating techniques is intrinsic to the large exposure required to approach distal tibia. The locking plate (LP) is a new device for treatment of fractures. We assessed the bone union rate, deformity, leg-length discrepancy, ankle range of motion, return of pre injury activities, infection and complication rate in 30 selected patients, who underwent minimally invasive osteosynthesis and open reduction and internal fixation of closed distal tibia fractures with an LP. **Methods:** This was a prospective study included both sex and age group between 18-80 years, mean age 38 years. All the patients were admitted into orthopaedic ward of Comilla Medical College Hospital. The patients who had been diagnosed as fracture shaft of tibia at lower third and who are fit for anesthesia only included in the study; whereas the patients with skeletal immaturity, open tibial shaft fracture and unfit for anesthesia were excluded from the study. All the patients were treated with distal tibial metaphyseal locking plate and regular follow up for a period of 6 months at 4 weeks interval. We scheduled clinical, functional and radiographic (plain anteroposterior and lateral radiographs) evaluation at 6, 12, 24 weeks, 1 year from the index procedure and then annually. **Result:** Thirty patients were evaluated. Among 30 patients 27 (90%) patients were male and female 3 (10%). Study showed out of 30 patients 29 (96.66%) patients with bone union, angular deformity <7º 7 (23.33%) patients, no patients showed leg length discrepancy >1.1cm. Functional results showed limp 4 (13.33%) patients, range of motion of ankle >20º 15 (50%) patients. Return to pre injury activities 21 (70%) patients, deep infection one patient (3.33%). **Conclusion:** Locked plating of distal tibia fracture is an established approach. This procedure allows earlier bone healing, with less morbidity. Study revealed it is a good option to treat distal tibia fractures.

Key words: Distal tibia fracture, locked plating, morbidity.

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Introduction:

Fractures of the distal tibia can be challenging to treat because of the limited soft tissue, the subcutaneous location and poor vascularity. The best treatment remains controversial. Nonsurgical treatment is possible for stable fractures with minimal shortening, but mal-union, shortening of affected leg, limitation of range of motion and early osteoarthritis of the ankle have all been reported following treatment of these fracture particularly pilon fracture[1,2]. Surgical fixation of distal tibia fractures can be difficult and requires careful preoperative planning. Fracture pattern, soft tissue injury, and bone quality critically influence the selection of fixation technique[3]. Several surgical methods have been described, including external fixation, intramedullary nailing and plate fixation. External fixation can be useful in open fractures with soft tissue injury which preclude nail or plate fixation, but may result in inaccurate reduction [4,5], a relatively high rate of mal-union (range, 5% - 25%)[6,7] or nonunion (range, 2% - 17.6%) [4,8], and pin tract infection (range, 10% - 100%)[5,7]. In diaphyseal fractures of the tibia, intramedullary nailing allows

relatively atraumatic closed stabilization. It preserves the vascularity of the fracture site and integrity of the soft tissue envelope[9]. However, stable intramedullary nailing of the distal tibia may be difficult to achieve because the hourglass shape of the intramedullary canal prevents a tight endosteal fit and compromises torsional and angular stability[10]. Secondary displacement of the fracture on insertion of the nail, breakage of nails and locking screw (range, 5%-59%)[11], and mal-union of the tibia (range 0– 29%)[12,13] are potential risks. Classic open reduction and internal plate fixation require extensive soft tissue dissection and periosteal stripping even in expert hands, with high rates of complications, including infection (range, 8.3% - 23%)[14,15] and delayed union and non-unions (range 8.3% - 35%)[16,14,15,17,18]. Several minimally invasive plate osteosynthesis techniques have been developed, with union rates ranging between 80% and 100%[19-22]. These technique aim to reduce surgical trauma and to maintain a more biologically favorable environment for fracture healing. Nevertheless, complication, such as angular deformities greater than 7 (range 7.1% - 35%) [21,17], hardware failure (range 0%-10%) [23, 21], and non-unions (range 0-20%)[19, 20] have been reported.

A new advance in this field is represented by the "locked internal fixation." These device consist of plate & screw systems where the screws are locked in the plate at a fixed angle. Screw locking minimizes the compressive forces exerted by the plate on the bone because the plate dose not need to be tightly pressed against the bone to stabilize the fracture. The claim of minimizing disturbance of the bone blood supply [24-27] will require future confirmation. The system works as flexible elastic fixation that putatively stimulates callus formation. The anatomical shape prevents primary displacement of the fracture caused by inexact contouring of a normal plate, and allows a better distribution of the angular and axial loading around the plate[25,26]. These biomechanical advantages as contrasted to other approaches have not been confirmed in clinical follow up studies.

We therefore assessed the union rate, deformity, leg-length discrepancy, gait and ankle range of motion, return to preinjury daily and sports activities, and infections and other complication. We compared our results with those reported by other authors using the same technique to evaluate whether the locking compression plate is a suitable device for surgical management of distal tibia fractures.

Method:

This was a prospective study conducted in the department of orthopaedics of Comilla Medical College Hospital. A total thirty cases of either sex were included in the study. A written informed consent was obtained from the cases included in the study group. Adult patients who have been diagnosed as closed distal tibia and fibula fractures treated from January 2018 to December 2021, who are fit for anesthesia only were included in the study. On the other hand patients with skeletal immaturity, open distal tibia and fibula fractures and unfit for anesthesia were excluded from the study. The patients were selected based on the history, clinical examination and radiography.

Five (16.66%) patients sustained their fracture as a result of a fall, 19 (63.33%) in a motor vehicle accident and six (20%) during sports activities. None had a polytrauma or an open fracture. Depending on the skin condition, surgery was planned when the ankle swelling subsided, and the wrinkle sign was present. In the wrinkle sign, the ankle is dorsiflexed while the anterior aspect of the ankle is observed; the absence of a skin crease or wrinkle suggests severe swelling[28]. The time between trauma and surgery was 8.5±4.4 days (range, 5-21 days). There were 3 women and 27 men, ranging in age from 25 to 66 years (mean age for all patients, 43±7 years; mean age, men, 42±12 years, age range men 26-66 years; mean age, women 44±7 years, range, women, 25-65 years). In all patients, the distal tibia was affected. In 21(70%) of 30 patients the fibula was fractured as well.

The minimum follow up was (average, 2.8; range, 1-4 years) 1 year after surgery. All the procedures described in this investigation were approved by our local ethics committee. All the patients gave written informed consent to be included in the present study.

All patients had plain radiographs and were extra articular fracture. Immediate skeletal stabilization was achieved by splints with above knee back slab. All procedures were performed using a previously described approach[29].

Briefly, with the patients supine on a radiolucent table, antibiotic prophylaxis was administered (Cefuroxime, 1.5 g intravenously). Both the injured and the non injured limb were prepped and draped above the knee, thus allowing intra operative alignment to be checked against the normal limb. The joint line of the both knee and the ankle was identified with fluoroscopy control

and marked on the skin. Using manual traction at the ankle, the fracture was gently reduced, restoring limb length, alignment and rotation. **(Fig-1)**

Fig-1: Showing the incisions and plate in MIPO technique.

Most often, we internally fixed the tibial fracture first when a fibular fracture was present. However, if normal length, axis and rotation of the tibial fracture were not achieved, a fibula fracture, if present was plated first using a one third tubular plate to provide lateral stability, restore the correct length, and avoid over distraction at the tibial fracture site. Thus in two patients we first stabilized the fibula using a one third tubular plate.

The main fracture fragments of the distal tibia were aligned and reduced percutaneously or through separate stab incisions using a periosteal elevator, clamps, or Kirschner wires as joysticks, and then fixed with individual lag screws. One longitudinal incision was made on medial malleolus and one longitudinal incision made on tibia proximal to the fracture in 18 patients. A subcutaneous tunnel was produced using forceps or a periosteum elevator. Following appropriate reduction of the fracture, a locking compression plate-distal tibial plate was inserted to bridge the fracture site. We choosed a plate long enough to bridge the metaphyseal zone and allow the insertion of at least two bicortial screws insertions proximal to the fracture. More than two screws in each fracture fragment may cause increased stress at the plate for small bridging lengths and small fracture gap sizes[30]. On the other hand, additional screws increase the implant stress since higher loads are needed to achieve bone contract in tibial fractures[30].
Remaining 12 patients were operated giving one long incision to expose the fracture site. In these cases two patients developed marginal superficial skin necrosis which were healed spontaneously by giving oral antibiotics.

Distal to the metaphyseal fracture, we inserted bicortical or unicortical screws using as many of the distal plate holes as possible(maximum, nine holes). We used Kirschner wires to secure, through holes of the plate, the latter to the bone before screw insertion. At this stage, we assessed limb alignment by comparison with the other limb. We established the correct rotation evaluating the alignment of the proximal and distal cortices of the distal tibia and comparing at 90º of knee flexion the axis between the tibial tuberosity and the inter-metatarsal spaces. Screw were then inserted percutaneously through stab wounds as necessary. The stab incisions were irrigated and closed routine suture, the wound dressed. The mean hospital stay was 11.4 days (range,6-22 days).

All limbs were immobilized in a bellow knee plaster cast for 6 weeks. Injectable antibiotics were given for three days. We did not routinely use post-operative venous thromboembolism prevention. We instituted non weight bearing crutch walking while still in hospital, following recovery from the anesthesia. At 2 weeks, we removed the stitches and plaster slab reapplied. The weight bearing status was dependent on the individual fracture pattern, but most patients could at least partially weight bear at 6 weeks. Out patients physiotherapy was instituted to maximize the range of motion of the foot and ankle immediately after definitive removal of the cast.

We scheduled clinical, functional and radiographic (plain anterior posterior and lateral radiographs) evaluations at 6,12,24 weeks, 1 year from the index procedure and then annually. All the evaluations were performed by the surgeon. The functional outcomes were based on four parameters: substantial limb, range of motion of the ankle, inactivity (unemployment because of the leg injury or inability to return to daily activities because of the leg injury), infection and complication rate. We defined a late skin infection as one that occurred at least 2 months after complete wound healing.

We evaluated three radiographic parameters: union (bridging of at least three of four cortices on two orthogonal views), deformity (<7º), and leg-length discrepancy (<2.5 cm in the tibia) on standard long-leg radiographs. We considered a healing time less than 6 months normal and between 6 and 9 months as a delayed union. Fractures not healed within 9 months

were considered a non-union according to the 1988 FDA guidance document definition for tibial fractures, requiring 9 months during of the non-united fracture with no evidence of progressive healing over the previous 3 months [31,32].

Result: Union was achieved in all patients. Seven patients (23.33%) had angular deformities, all less than 7º. One patient (3.33%) had a valgus deformity; three patients (10%) had a varum deformity and two (6.66%) of these seven patients had anterior bowing (6º and 7º respectively) of the tibia at the fracture site. No patient had a leg length discrepancy greater than 1.1cm. At the last follow up, four (13.33%) of the thirty patients had a limp. The range of motion of the ankle was reduced more than 15º compared with the contralateral side in five (16.66%) patients. In ten (33.33%) patients, the plate was palpable in the subcutaneous tissue at the time of the latest clinic visit, but did not produce any discomfort that interfered with the patient, daily activities. Three (10%) of the 30 patients had not returned to their leisure sports activities.

Table–I: Overall results according to bone and functional parameters.

Variable	Number of patients
Bone results	
Union	29/30 (96.66%)
Angular deformity <7º	7/30 (23.33%)
Leg-length discrepancy > 1.1 cm	0/30 (0%)
Delayed union	1/30 (3.33%)
Functional results	
Limp	4/30 (13.33%)
Range of motion of ankle > 20º	15/30 (50%)
Return of preinjury activities	21/30 (70%)
Deep infection	1/30 (3.33%)

The wound healed without further wound problems in 25 (83.33%) of 30 patients. Three (10%) patients developed a late infection around proximal or distal screws at 12,14 and 18 weeks, respectively, after the index operation. The wound infections were controlled with antibiotics according to culture sensitivity test. One(3.33%) patient developed deep infection after 18 weeks of index operation but fracture was united. Infection was controlled after removal of implant of that patient. One (3.33%) female patient developed complex regional pain syndrome that was managed with intensive rehabilitation and resolved after 9 months.

Fig-2A

Fig-2B

Fig-2C

Fig-2(A-C): 2A. Pre-operative x-ray of distal tibia fracture.2B. Post-operative x-ray of distal tibia fracture with implant.2C. Healed incision after 6 weeks of operation.

Table-II. Clinical series of distal tibia fractures treated with Locking plate.

Study	Fracture type	Open fracture	Outcome	Deep infections
Collinge et al. [35]	26 distal tibia	14	26 union in 35 weeks (range, 12–112); 9 required supplementary procedures; no deformity C 5or shortening C 1 cm; 1 implant failure	2 (1 in closed fracture)
Hasenboehler et al. [37]	32 diaphyseal and distal tibial fracture	8	29 union in 27.7 weeks (range, 24–60); 2 nonunion; no deformity C 5or shortening C 1 cm; 1 plate bending (18)	1
Hazarika et al. [38]	20 distal tibia	8	18 union in 28.5 weeks (range, 9–68); 2 required supplementary procedures; 2 nonunion; 1 implant failure	2(closed fractures)
Ronga et al. [current study]	19 distal tibia	0	18 union in 22.3 weeks (range, 12–24); no deformity C 7or shortening C 1.1 cm	3

Discussion:

The treatment of distal tibia fractures can be challenging because of the limited soft tissue, the subcutaneous location of the bone, and poor vascularity. Minimally invasive plating techniques reduce iatrogenic soft tissue injury and damage to bone vascularity, as well as preserve the osteogenic fracture hematoma[33,34]. Open reduction and internal fixation gives rise to soft tissue damage. Initial clinical series using minimally invasive methods demonstrated favorable results with low rates of infection and non-union[20,21,35,36], but several complications such as angular deformities greater than 7º and hardware failure have been reported [19-21]. Locking plates have been developed to overcome these limits. We therefore evaluated a selected group of patients with closed distal tibia fracture, the bone union rate, deformity, leg length discrepancy, range of motion of the ankle, return of preinjury daily and sports activities and infection other complications rate after locking plating.

Our study presents several limitations. First, the relatively small number of patients and the lack of a control group did not allow the formulation of definitive statements and guidelines. As closed distal tibia fractures are uncommon, it would be difficult for a single hospital to collect a large enough number of patients to perform a randomized study. Several authors using locking tibial plates reported, in series of between 20 to 48 patients, a percentage of open fracture of 19% to 40% [20,35,37-39].

The percentage of union, and delayed union, and non-union is comparable to studies that included only patients with closed fracture[36,40]. Three preliminary retrospective studies using an locking plate to manage closed and open distal tibia fractures reported a union rate similar to our study (range, 90%-100%) (Table 2) [35,37,38].

However, two of these three studies reported several supplementary procedures (range, 2-9 procedures) performed to obtain union.

No patients had angular deformities greater than 7º or leg discrepancy greater than 1.1cm, although we acknowledge that two of four patients each had deformities in two planes. This result can be attributed to the experience of the surgeon, to the contour of the anatomic plate, and to the fixed angle stability of the holes. These findings are comparable to other studies using an locking plate (Table 2) [10,35,38]. Before fixing the plate, given the possibility of a discrepancy between the anatomical axis of the tibia and the contour of the plate, we assessed limb alignment by comparison with the other limb. Then we inserted Kirschner wires through the holes of the plate to secure the latter to the bone before screw insertion. The fixed angle stability of the holes avoid the need of tightly pressing the plate against the bone to stabilize the fracture. This prevents primary displacement of the fracture caused by inexact contouring of a plate. In a previous study, the same surgeon (NM), using a dynamic compression plate pre-contoured before undertaking the procedure, reported that seven of 20 patients (35%) had angular deformities greater than 7º[21]. The design of the implant is also important. The locking plate has a better fatigue resistance than earlier AO plates[41]. These mechanical properties of the locking plate may be the reason why no plates broke in this series compared to previous studies (2.7% - 10% of the plates) [17,19,21].

However, in the other three studies using an locking plate there were two cases of plate breakage and one case of plate bending. One of the two plate failures involved a man with diabetic neuropathy and questionable compliance whose plate broke 4 months

after injury while excessive weight bearing determined the plate bending of more than 18º [35,37].

Five patients (26%) experienced restriction in ankle motion greater than 20º and 16 patients (84%) had not returned to their preinjury leisure activities. Collinge et al. reported the only variable that influenced functional outcomes (34% of patients), which was associated with poorer function results [35]. Associated lower extremity fracture, other injuries, intra-articular extension, bone loss, open fracture, or the time of union were not associated with poorer function on limb specific assessments.

We identified late infections in 3 (10%) patients. This complication was also observed by other authors using the same plates, and was attributed to the possible plate prominence in the distal region of the tibia rather than to open fractures (Table 2) [35,37,38]. In our patients with minimal invasivetechnique, bone healing was not affected by the infection. The resistance to superficial infection and good bony union may be due to the preservation of bony vascularity with the use of the minimally invasive technique[39]. Given the small numbers of patients in our study, we cannot draw any definitive conclusions.

Conclusions:The high percentage of unions and the low rate of complications, comparable to previous studies using the same plates, suggest the locking plate may be reasonable alternative for treating distal tibia fractures. The cost of the locking plates, the technically demanding nature of the procedure should be considered when comparing the efficacy of this device to the normal plates. Only future prospective randomized studies may be able to clarify these issue.

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Original Article

Soft Tissue Defect of Lower Limb Covered by Local Perforator Flap

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Abstract:

Background: Local perforator flap for coverage of lower limb defect is an ideal procedure for small to medium sized defect. If proper distribution of perforator is known, local perforator flap is an easy and best technique for coverage of small and medium sized wound of lower limb. **Objective:** The purpose of the study was to see the outcome of local transposition fasciocutaneous flap that incorporated with septocutaneous and or musculocutaneous perforator. **Method:** This study was carried out between Jan 2017 to Dec 2020. 35 cases were included in this study. Flap ranged from 12 cm^2 to 54 cm^2. Donor area covered by split thickness skin graft. **Result:** 32 flaps were survived completely. Marginal flap necrosis occurred in two cases. Flap loss occurred in one case which is managed by a different technique. **Conclusion:** No functional deficit were found in those patients for using perforator based local transposition fasciocutaneous flap.

Key words: Perforator, Fasciocutaneous, Skin graft.

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Introduction:

Perforator flaps are based on angiosome concept. It means the source (segmental or distributing) vessels supplied all tissues between skin and bone as composite blocks that were linked together by anastomosing arteries[1,2]. Lower limb injury is one of the most commonly encountered problems in our country as our traffic system and vehicles are not as standard as developed countries. Multidisciplinary team is needed to manage such cases. Plastic surgeons are responsible for to cover soft tissue defect in lower limb trauma. For reconstruction of lower limb defect, various options are available from loco regional to free flap. The evolution of random pattern flaps to fasciocutaneous flaps to myocutaneous flaps and finally to the perforator flaps has followed a linear progression. After invention and describing of vascular anatomy of whole body by Manchot, Salmon, Cormack, Lamberty, Taylor, Palmer, Morris, Tang and others, perforator flap era began in 1989 by Koshima and Soeda[3,4,5]. After 30 years of evolution perforator flap reached the goal of reconstruction is to match optimal tissue replacement with minimal donor site expenditure while maintaining function. The only limiting factor of the perforator flap is the location of the pivot point where perforator relative to the defect for pedicle perforator flaps. If we want to cover a wound with well vascularized flap, local fasciocutaneous flaps can achieve comparable healing rates as muscle flap. Our study to see this type of perforator flap coverage in lower limb defect[6,7,8].

Methods:

It is a prospective interventional study and conducted in Burn and Plastic surgery department, Cumilla

Medical college hospital from January 2017 to December 2020. Study population was 35 among them twenty-five patients were transferred from casualty and orthopedic ward with exposed bone. Before every operation wound was made infection free by giving antibiotic according to culture and sensitivity and regular dressing with aseptic environment. In 15 cases external fixator were given by our orthopedic colleague for stabilizing of bone in open fracture before doing flap coverage. Anaemia, DM and other co morbid conditions were optimized before final flap coverage.

Surgical Technique:

At first a handheld Doppler is used to locate the available perforator near the wound. As we know perforators tend to run in a proximal to distal direction,a proximallybased designed flap is usually preferred. Distally based flap was also designed according to wound size and location of perforator.Flap is placed in such a way that perforator is placed on base of the flap and it makes the pivot point of the flap. With skin marker flap is designed adjacent to the defect. After giving tourniquet, flap is elevated over the muscle. Care should be taken to elevate the flap in the loose areolar tissue plane so that we can preserve para-tenon in order to do skin graft in donor area. Superficial veins and nerves are included with this flap. Flap elevation is proceeded until marked perforators are seen. If selected perforator is septocutaneous, dissection is straight forward. But in case of musculocutaneous perforator, intramuscular dissection may needed. Once the adequacy of the perforator is confirmed, flap elevation can be done beyond the location of the perforator. Flap then transposed into the defect and closed in one layer. Tension should be avoided during closure. Some dog ear may present at the pivot point, usually settles down with time. The donor area is covered by split thickness skin graft.

Result:

Total 35 patients were included in this study. The youngest and eldest patients ages were 10 and 65 years respectively. 26 patients were male. Most of the defects were located in the middle third of the leg and largest size of the flap was (9x6) cm^2 and smallest size of the flap was (3x4) cm^2. Among 35 patients, 30 patients suffered from soft tissue defect with exposed tibia due to trauma. Three patients were suffering from squamous cell carcinoma and rest of the two were melanoma. These five Malignant cases were excised with margin clearance which were confirmed by histopathology. Twenty-five flaps were incorporated as septocutaneous perforator, six were incorporated with both musculocutaneous and septocutaneous four were incorporated with only musculocutaneous perforator. Twenty-four flaps were designed distally based and rest of the flaps were proximally based. 32 flaps survived without any complication.

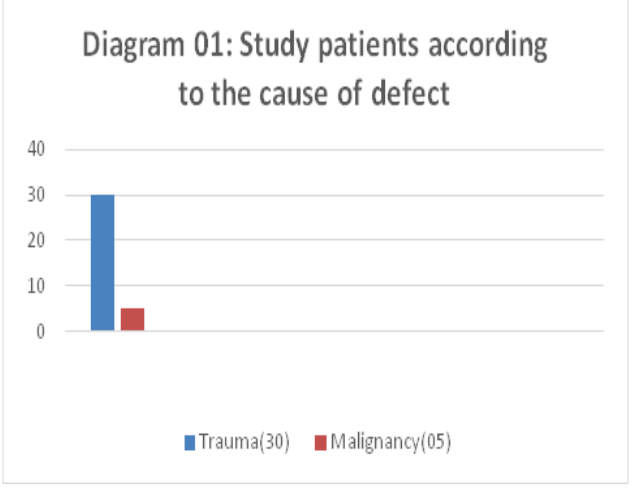
Case 01

Case 02

Case 03

Case 04

Case 05



Marginal flap necrosis occurred in two cases. It was managed conservatively. One lost flap was treated with another perforator flap. In two patient donor site partial graft loose occurred which is managed conservatively. Donor site graft loss included in flap complication. There were no functional deficit of the reconstructed limb.

Table I: Study patients' defect location, size & types of flap coverage

Location of Defect	Number of Patient	Size of Defect(cm^2)	Base of the flap
Upper third of the leg	02	5×4	Proximally based
	01	9×6	
	03	8×5	
	03	8×4	Distally based
	04	3×4	
Middle third of the leg	05	7×3	Distally based
	04	8×3	
	03	5×4	
	02	3×4	Proximally based
	02	9×6	
Lower third of the leg	02	6×4	Distally based
	03	6×3	
	01	5×4	Proximally based

Among the patients, 13 have got defect in upper third of the leg, 16 in the middle & 06 in the lower third of the leg. Overall, 24 flaps are designed from distal base, whereas, 11 are designed from proximal base.

Table II: Post-operative complications

Post-operative complications	Frequency	Percentage(%)
Marginal Flap Necrosis	02	5.7
Total Flap Loss	01	2.9
Donor site morbidity		
Skin graft loss	02	5.7
No complication	30	85.7

Discussion:

In 1981, Ponten first described the fasciocutaneous flap. They included deep fascia and flaps were supplied by the perforators of the flap. Previously local flaps were raised in the subcutaneous plane and nourished by sub dermal plexus[5,6,7]. That time length breadth ratio is strictly maintained for a local transposition flap. But in latest technique perforator flaps are neurovenocutaneous type where superficial veins, nerves are present in axial axis of the flap. It can be proximal based or distally based. Ponten'sstudy shows that 74% flaps were survived[7,8,9] and our study 85.7% flaps were complication less.

In our study we performed 35 cases in which defect size was (9X6) cm^2 from (3X4) cm^2. Chin ho wong (2007) has done similar study by injecting cadaveric lower limb to identify perforator and then six clinical cases. In anatomic study he has identified some favorable configuration, unfavorable configuration and some neutral configuration. In six clinical cases the mean defect was 27 cm^2 and their all flap survived completely[7].

Many authors have tried to do island type perforator flaps to cover the lower limb defects. In this technique flaps are solely depending on perforators. In trauma cases sometimes these perforators are found traumatized and difficult to do such flap. The hand held Doppler can evaluate the arterial flow correctly but cannot confirm the venous return. But in case of perforator transposition flap with intact skin base provides an additional channel for venous drainage via sub dermal plexus. For this reason, small and medium sized defects can be closed by our types of perforator flap. Flaps can be proximally or distally based. Both can be done by this technique. Perforators in the proximal and middle thirds of the leg are inherently longer because of the presence of muscle through which they traverse. For this criteria, in these rejion flap can be transposed with minimal tension of the perforator. Leg perforator are short in lower portion of the leg and sometimes it is difficult to mobilize the flap[8,9,10] .

Limitations of this study is unpredictable anatomy of perforators and sometimes due to trauma failed to identify any perforator. Meticulous dissections are mandatory for this method. Only small and medium sized defects are closed by this procedure.

Conclusion:

The perfusion and vascular territory of perforators are highly complex and variable. In limb perforator flaps should be designed in parallel to the axis of the linking vessels of the limbs to capture the largest and most reliable territory. Where microsurgical procedure is not available local transposed perforator flaps is the best option to cover the small and medium sized limb defect. Because it is done in a single stage where dissection is easy and short operating time with minimal donor site morbidity. Furthermore, tissue is replaced by same type of lost tissue.

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Original Article

Serum Thyroid Peroxidase Antibody Estimation and Its Effect on Thyroid Function in First Trimester of Pregnancy

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Abstract:

Background: Thyroid disease is one of the most frequent endocrine problems in pregnancy, and it's related to a worse pregnancy outcome. Thyroid disease can be triggered by pregnancy's physiological changes. TSH and TPO-Ab positivity in the mother increases the risk of pregnancy complications. **Objective:** To measure serum TPO-Ab, TSH & FT4 in 1st trimester pregnant women. **Methods:** This cross - sectional study was carried out in the Department of Biochemistry, Dhaka Medical College, Dhaka from the period of Jan 2019 to Dec 2019. In this study, fifty (50) pregnant women in 1st trimester (7-12 weeks) consider as Group A and fifty (50) healthy non-pregnant women consider as group B were enrolled from outdoor (Including family planning unit), Department of Obstetrics & Gynecology, Dhaka Medical College Hospital, Dhaka. Baseline parameters (BMI, blood pressure) were evaluated for all study subjects. Serum TPO-Ab, TSH & FT4 level were measured for all study subjects. Statistical analysis was done by SPSS 22.0 package for windows and the significance was defined as $P<0.05$. **Results:** Sixteen (32%) women of first trimester were found to have TSH >2.5 & TPO-Ab positive 12 (24%). Out of these positive subjects 11 (22%) have high TSH (>2.5 mIU/L), FT4 was low in 7 (14%) of all subjects. The study revealed, there was a significant positive correlation between TSH & TPO-Ab ($P<0.05$) and negative correlation between FT4 & TPO-Ab. **Conclusion:** This study reveals significant association and a positive correlation between TPO-Ab with TSH in first trimester of pregnancy.

Key words: TPO-Ab= Thyroid peroxidase antibody, TSH, FT4, Trimester and Pregnancy.

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Introduction:

During pregnancy, a series of profound physiological changes occur that have a substantial impact on maternal thyroid function. Because this dynamic change in thyroid physiology is especially important in the early stages of pregnancy, serum TSH levels vary greatly during the first trimester.[1] Thyroid abnormalities are the second most prevalent endocrinological illnesses in pregnancy[2] and they're linked to a bad pregnancy outcome. Both hypothyroidism and hyperthyroidism can cause complications during pregnancy[3]. Thyroid stimulating hormone (TSH) levels in the mother have been linked to an increased risk of preterm birth, placental abruption, fetal mortality, and impaired neurological development in children.[4] Similarly, antibodies to thyroid peroxidase are linked to an increased risk of pregnancy complications such as miscarriage, placental abruption, pregnancy-induced hypertension, and preterm birth.[5]

Low free thyroxin (FT4) concentration due to thyroid hormone secretion failure before 18 to 20 weeks of pregnancy is a significant risk factor for fetal development impairment.[6] Women who have a high antibody titer in early pregnancy are more likely to

have postpartum thyroid dysfunction, which can impair future pregnancies.[7] Hypothyroidism affects roughly 2-3 percent of pregnant women, with autoimmune thyroid disorders accounting for 50 percent of these instances.[8,9] Hypothyroidism is caused by autoimmune disease, mainly Hashimoto's disease with anti-thyroid peroxidase antibodies. Hypothyroidism increases the risk of vasculoplacental problems during pregnancy.[10]

Thyroid peroxidase (TPO) is a membrane-bound enzyme that catalyzes iodide oxidation and iodination of thyroglobulin tyrosyl residues and is involved in thyroid hormone production.[11] Anti-TPO-antibody (antiTPO-Ab) reacts with TPO and causes thyrocyte death. TPO autoantibodies are widespread in the euthyroid population and are related to severe changes in the course of pregnancy that harm the mother, fetus, and/or newborn.[12]

During pregnancy particularly in the first 1st trimester of pregnancy upper range of the TSH decrease, is driven by elevations of human chorionic gonadotropin, which cross-react at the TSH receptor and cause a concomitant decline in first-trimester TSH levels.[13] Recent ATA guidelines recommend that anti-TPO antibody levels should be checked if TSH levels are found to be above 2.5 mlU/L during the first trimester.[14] As Post-partum thyroid dysfunction (PPTD) can be predicted by measurement of anti TPO-Ab in early gestation, screening for thyroid dysfunction during pregnancy should be considered. Pregnant TPO-Ab positive women are more likely to suffer from markedly increased TSH levels, with increased risk being 3-4 folds greater in a normal pregnancy. The fetal brain development is fully dependent on maternal thyroid hormone, and autoimmune hypothyroidism has been linked to impaired fetal brain development as well as an increased chance of miscarriage up to 12 weeks of pregnancy.[15]

The upper range of the TSH decrease during pregnancy, particularly in the first trimester, is driven by elevations of human chorionic gonadotropin, which cross-react at the TSH receptor and cause a concomitant decline in first-trimester TSH levels.[13] Anti-TPO antibody levels should be checked if TSH levels are found to be higher than 2.5 mlU/L during the first trimester, according to recent ATA guidelines.[14] Because anti TPO-Ab levels in early pregnancy can predict postpartum thyroid dysfunction (PPTD), screening for thyroid dysfunction during pregnancy should be considered. Pregnant TPO-Ab positive women are three to four times more likely to have significantly elevated TSH levels than normal pregnant women.

Methods:

This cross-sectional analytical study was conducted in the Department of Biochemistry, Dhaka Medical College Hospital, Dhaka from January 2019 to December 2019 over a period of one year. A total of 50 pregnant women in their 1st trimester who attended the Out Patient Department (OPD), Department of Obstetrics & Gynecology, Dhaka Medical College Hospital, Dhaka, were enrolled as study participants (Group A) and a similar number of healthy non-pregnant women were enrolled as the control group (Group B). This study excluded participants who were under the age of 18 or over the age of 40, as well as those who had chronic systemic illnesses.

The purpose of the study was explained in detail to each subject. Written informed consent was obtained from both the pregnant and healthy individuals. Data were collected on a pre-designed data collection sheet, which included information about the patient, relevant history, and the investigation. Height, weight, BMI, and blood pressure were also measured.

After all aseptic precaution 5ml of venous blood sample were collected from each study subject in a disposable plastic syringe. Then the blood was transferred to a dry clean fresh red capped test tube vial (Guangzhou ASPO medical Equipment Co., Ltd). Each test tube was labeled and coded for identification and was allowed to clot at room temperature for 20 minutes. Then it was centrifuged at 3000 rpm for 10 minutes and the separated serum was kept in Eppendorf tube after proper labeling. All the biochemical tests were carried out as early as possible. Whenever there was a delay, the sample was stored at -20°C.

For assessment of thyroid function, serum free thyroxine (FT4), thyroid stimulating hormone (TSH) were measured. Serum FT4, TSH were measured by Enzyme link immunosorbant (ELISA) method. Again, serum TPO-Ab of total study population were measured. Serum TPO-Ab was estimated by Micro Particle Enzyme Immunoassay (MEIA) method.

After checking and rechecking all the data were inputted into computer. Continuous variables were expressed as mean ± SD or median (IQR) and compared between groups by unpaired students t-test

or Mann Whitney-U test. Categorical variables were expressed as frequency with percentage and compared using Chi-square test or Fisher's exact test as appropriate. Correlation was done by Pearson's correlation coefficient test. All p value<0.05 was considered as statistically significant. All analysis was done using the SPSS 22.0.

Results:

Table-I: Baseline parameter of the study subjects (N=100)

	Group-A Mean±SD (Min-max)	Group B Mean±SD (Min-max)	Pvalue
Age(years)	26.28± 5.37 (18–38)	27.98± 6.73 (18–40)	0.660
SBP(mmofHg)	112.00± 10.69	110.06± 18.63	0.525
DBP(mmofHg)	70.20± 5.95	65.00±20.87	0.096
BMI(kg/m^2)	25.76± 2.93	25.54± 3.00	0.711

In terms of age, SBP, DBP, and BMI, there was no significant difference between Group A and Group B.

Table-II: Thyroid parameters of the study subject (N=100)

Thyroidparameters	GroupA (n=50)	GroupB (n=50)	p - value
FT4 (pmol/L) [Mean±SD]	12.37± 1.96	13.73± 2.80	[a]0.006
TSH (mIU/L) [median (min-max)]	2.55 (1.20– 6.70)	2.22 (0.11–3.13)	[b]0.040
TPO-Ab (U/mL) [median (min-max)]	40.00 (28.0– 75.7)	37.0 (27.0–63.3)	[b]0.031

Mean of serum FT4 was 12.37± 1.96 in Group A and 13.73± 2.80 in Group B, Median of serum TSH was 2.55 in Group A and 2.22 in Group B; median of serum TPO-Ab was 40.0 in Group A and 37.0 in Group B. FT4 level was found significantly lower in Group A than Group B whereas TSH and TPO-Ab were found significantly higher in group A than group B.

Table-III: Distribution of the study subject according to serum FT4 (N=100)

	Group A	Group B	p-value
Normal (9-24pmol/L)	44 (88%)	49 (98%)	0.111
Low (<9pmol/L)	6 (12 %)	1(2%)	

FT4 was low in 12% of the subject in Group A and 2% in group B (p>0.05).

Table-IV: Distribution of the study subject according to serum TSH (N=100)

TSH (mIU/L)	Group A	Group B	p-value
Normal	34 (68 %)	47 (94 %)	<0.001
High(>2.5)	16 (32 %)	3 (6 %)	

Above normal level of TSH was found significantly higher in group A (32%) than group B (6%).

Table-V: Distribution of the study subject according to serum TPO-Ab (N=100)

TPO-Ab (U/mL)	Group A	Group B	p-value
Negative(<60U/mL)	38 (76)	47 (94)	0.022
Positive(≥60U/mL)	12 (24)	3 (6)	

TPO-Ab(≥60 U/mL) was found significantly higher in group A (24.0%) than group B (6.0%).

Table-VI: Association of TPO-Ab with FT4 in group A (N=50)

FT4	TPO-Ab (≥60 U/mL) (n=12)	TPO-Ab (<60 U/mL) (n=38)	p-value
Normal	6(50%)	38(100%)	<0.001
Low	6 (50 %)	0 (0 %)	

Low FT4 was found significantly higher among the pregnant women with TPO-Ab ≥60 U/mL than TPO-Ab<60 U/mL (p<0.001).

Table-VII: Association of TPO-Ab with TSH in group A (n=50)

TSH	TPO-Ab (≥60 U/mL) (n=12)	TPO-Ab (<60 U/mL) (n=38)	p-value
High	11(91.7%)	5(13.1%)	<0.001
Normal	1(8.3%)	33(86.9%)	

High level of TSH was found significantly higher among the pregnant women with TPO-Ab ≥60 U/mL than TPO-Ab<60 U/mL (p<0.001).

Table-VIII: Distribution of pregnant women according to TPO-Ab level in previous history of different maternal occurrence in group A (n=50)

Adverse maternal occurrence	TPO-Ab (≥60 U/mL) (n=12)	TPO-Ab (<60 U/mL) (n=38)
Complication(n=20)	7 (58.3)	13 (34.2)
Miscarriage(n=11)	3 (25.0)	8 (21.1)
Pretermdelivery(n=3)	2 (16.7)	1 (2.6)
IUGR(n=4)	2 (16.7)	2 (5.3)
IUD (n=2)	0 (0.0)	2 (5.3)
No complication(n=30)	5 (41.7)	25 (65.8)

Complication was found higher (but not statistically significant) among the pregnant women with TPO-Ab ≥60 U/mL than TPO-Ab<60 U/mL (p=0.250).

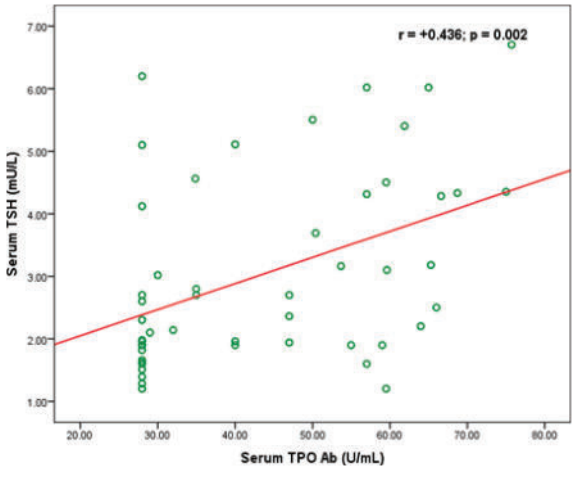

Figure-1: Scatter diagram showing correlation of serum TPO-Ab with serum TSH in group A (pregnant women)

Positive correlation between serum TPO-Ab with serum TSH in group A (pregnant women).

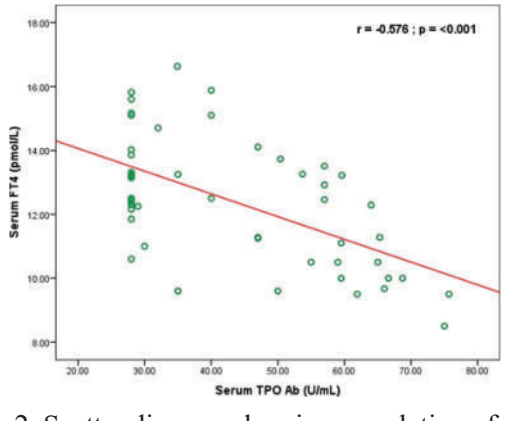

Figure 2: Scatter diagram showing correlation of serum TPO Ab with serum FT4 in group A (pregnant women)

Negative correlation betweenserum TPO with serum FT4 in group A (pregnant women)

Discussion:

After gestational diabetes, thyroid disease is the second most prevalent endocrine disorder. The physiology of pregnant women is significantly challenged by thyroid disease, which also has important maternal and foetal consequences. Thyroid hormone production rises by about 50% during pregnancy, and daily iodine needs also rise by a similar percentage. Pregnant women with thyroid dysfunction, such as hypothyroidism and hyperthyroidism, need to be closely monitored and treated as needed.[16]

In this study, mean age of the study subjects in group A and group B were 26.28 ± 5.37 years and 27.98 ± 6.73 years respectively. But the difference was not significant. Nahar, et al.[4] done the similar study on pregnant women where the mean age of the study was 24.20 ± 4.82 years. Dhanwal, et al.[8] done the study on subclinical hypothyroid pregnant women and the resultant mean age of that study was 25.6 ± 11.1 which are almost consistent with my study.

The study subjects' mean systolic and diastolic blood pressures were higher in group A than in group B, although still within normal limits. The difference was not statistically significant. It was also found non-significant in the study subjects at Dhanwal, et al.[8]. Mean body mass index of the study subjects was almost similar in both the groups in this study.

According to the study, mean serum FT4 level of the study subjects in group A was significantly lower than group B (p = 0.006). This result was consistent with Ardawiet al.[17] who found a lower level of serum FT4 in normal pregnant women during 1st trimester in comparison to non-pregnant women. In their study Serum FT4 levels showed a significant decrease by the 2nd trimester (p= 0.040).

Increased foetal demand and placental transfer of thyroid hormone during pregnancy, particularly in the first trimester, may also be responsible for higher FT4 levels indirectly via a negative feedback mechanism. The growing foetus releases enough antigen to stimulate the maternal immune system, which then produces thyroid peroxidase antibodies and has an inverse effect on the synthesis of maternal thyroid hormone.[18] TPO-Ab antibodies block each step of thyroid hormone synthesis, causing a decrease in serum free thyroxine (FT4) and an increase in serum

TSH levels in TPO-Ab positive women compared to TPO-Ab negative women during the first trimester.

Median TSH level was 2.5 (2.7-3.5).[19] In this study, median TPO-Ab level were 40 (28.0- 75.7) mIU/L and 37 (27.0-63.3) mIU/L in group A and group B respectively ($p < 0.031$). Lin, Zhang and Long[20] found median TPO-Ab level 38.9 mU/L which supported present study.

In this study, low FT4 was12% of the study subject in group A and 2% in group B. Low FT4 was more profound in group A than group B ($p= 0.111$). Sultana et al.[21] supported this finding. In this study, high TSH was32% of the study subject in group A and 6% in group B. Meena, el al.[22] found 6.5% high TSH.

This study showed positive TPO-Ab in 24% of the study subject in group A and 6% in group B($P <0.022$). Pradhan, et al.[23] (2013) showed that positive TPO-Ab was a significant risk factor for hypothyroidism in pregnancy and postpartum.

The present study revealed association of TPO-Ab with FT4 ($p<0.001$) and also association of TPO-Ab with TSH in 1st trimester of pregnancy ($p<0.001$).[5,12,21] Prospective studies done by Negro, et al.[24] found high TSH with progression of gestation in TPO- Ab euthyroid women.

Miscarriage (25%), Preterm delivery (16%), IUGR (16%) were common complications in TPO-Ab positive cases in this study. Rajput et al.[25] found miscarriage 12% in TPO-Ab positive women.

In this study, a moderate significant positive correlation of serum TPO-Ab was found with serum TSH in pregnant women ($p = 0.002$). Lin, Zhang and Long found significant strong positive correlation ($p<0.001$).20

Conclusion:

This study reveals significant association of TSH with TPO-Ab and inverse association of FT4 with TPO-Ab among the pregnant women of 1st trimester. TPO-Ab positivity was associated with raised TSH and low FT4.

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Original Article

Effect of Gestational Hypertension on the Morphology of Placenta and Birth Weight of Newborn

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Abstract:
Background: The placenta is a gestational organ that supplies the developing child with all of its nutritional, metabolic, and immunological requirements. There is growing evidence that initial abnormalities in placental development may affect fetal growth.Objectives:To the see the morphological shape of placenta in gestational hypertension and birth weight of the baby. **Methods:** This observational study was conducted in the Department of Anatomy, Sylhet M.A.G Osmani Medical College Hospital comprising 100 placentae from hypertensive mothers. Mothers who developed hypertension after 20th weeks of gestation without renal damage and evidence of other organ damage were included. Study variables were weight, shape, thickness, diameter, volume, and number of the cotyledon.Results: After analyzing the results of the study, we found the mean weight was 340.4±15.3 grams, the diameter was 16.12±0.47cm, thickness was 1.94±1.22 cm, volume was 310.52±13.06 ml, and the number of cotyledons was 19.33±2.13. 41% placenta were round, 35% were oval, and 24% were irregular in shape. **Conclusion:** The results of the present investigation offered a summary of the placenta's morphology in pregnancy-induced hypertension.

Keywords: Placenta, pregnancy induced hypertension, gestational hypertension, morphology of placenta.

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Introduction:
The placenta is a special type of gestational organ that serves as the source of nutrients for the developing fetus and provides it with the metabolic and immunological requirements it needs. Because of its advantageous placement at the interface between the fetus and the mother, it can capture the cumulative effects of events connected to pregnancy as well as changes that reflect the uterine environment.[1] It grows from decidua basalis and chorionfrondosum. As early as the third week of the embryo's intrauterine life, the placenta starts to meet the embryo's needs. A term placenta is a discoid, dark reddish-blue organ that is 15–25 cm in diameter, 400–600 grams in weight, 2–3 cm thick, and has 15–20 cotyledons.[2] According to Kambale 2016 the average placental weight is 450-500 grams.[3] The morphology of the placenta will change when any pregnancy is compromised by certain illnesses.[2]

Nearly 10% of pregnancies worldwide are affected by hypertension, which places a heavy burden on maternal and perinatal morbidity and mortality.[4] 5-8% of all maternal fatalities are caused by hypertension diseases.[5] The placenta's anomalies have been linked to the problems of hypertensive diseases in pregnancy.[4] There are several types of hypertensive disorders in pregnancy. These are gestational hypertension, preeclampsia, eclampsia, chronic hypertension, and chronic hypertension with superimposed preeclampsia.[6]

When high blood pressure develops after 20 weeks of pregnancy, without kidney or other organ issues, is called gestational hypertension. Preeclampsia can occur in certain pregnant women with gestational hypertension or pregnancy-induced hypertension (PIH)[6]. Five to eight percent of all pregnant women worldwide suffer from PIH.[4]

Preterm delivery, fetal growth restriction, low birth weight, placental abruption, cesarean section, liver insufficiency, subcapsular liver hematoma, cerebral edema, renal failure, thrombocytopenia, and intravascular coagulation are common complications when hypertension develops during pregnancy.[7] This study looked at numerous morphological characteristics of the placenta in pregnancy-induced hypertension.

Methods:

Between July 2013 to June 2014, the study was conducted in the Department of Anatomy in conjunction with the Department of Obstetrics and Gynecology at Sylhet M.A.G Osmani Medical college Hospital, Sylhet. 100 placenta from hypertensive mother were collected. Purposive sampling method were implied for data collection. The women ranged in age from 20 to 35. Women who developed hypertension 140/90 mm Hg after 20 weeks of gestation, without any protein urea were included in this study.Gestational age of the women was >34 weeks.The study excluded women who were expecting twins, Rh negative, or who had gestational diabetes, heart disease, autoimmune illnesses, or persistent hypertension, as well as those who had placenta previa and eclampsia.

Soon after birth, the placenta with its connected membranes and the umbilical cord were removed, cleaned under running water, marked, and then preserved in 10% formalin for 4-6 weeks. The placenta was than examined. We took note of the number of cotyledon, diameter, thickness in the center, shape, weight, and volume. Newborns' birth weights were recorded.

Weight was determined by weighing machine graduated in gram, mean of two maximum diameters taken at a straight angle and measured in centimeter. By using a thick needle that was inserted at five locations, thickness was measured. Volume was measured by water displacement method. Cotyledons were counted by gently pressing on the placenta's fetal surface to make them prominent. To analyze the data, descriptive statistics were employed. They were shown as mean and SD (standard deviation).

Results:

Total 100 placenta from hypertensive mother were examined. Mother's age, gestational age and birth weight of baby is shown on table I. Morphological characteristics of placenta is shown on table II. Figure 1 showing the shape of placenta. Among 100 placenta, 41% were round, 35% were oval and 24% were irregular in shape.

Table-I: Mother's age, gestational age and birth weight of the baby

Variables	Mean±SD	Range	Number (%)
Age of the mother (years)	26±2.19	20-35	100 (100)
Gestational age (weeks)	37±4.41	36-40	100 (100)
Birth weight of the baby (Kg)	2.3±1.53	2.1-2.70	100 (100)

Results are expressed as mean ±SD. Kg- kilogram

Table-II: Morphological characteristics of placenta

Variables	Mean±SD	Range	Number (%)
Weight of placenta (gm)	340.4±15.3	200-430	100
Diameter (cm)	16.12±0.47	12.4-18.34	100
Thickness in center (cm)	1.94±1.22	1.24-2.41	100
Volume (ml)	310.52±13.06	185.73-417.31	100

Results are expressed as mean ±SD. Gm-gram; cm-centimeter, ml-millili

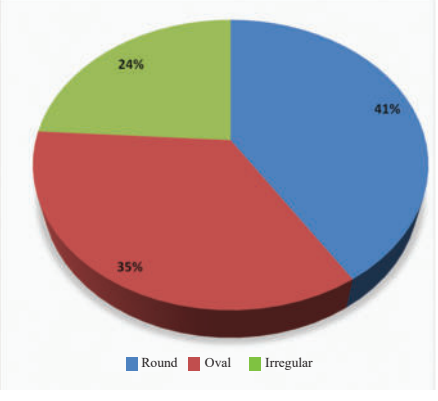

Figure 1: Shape of the placenta

Discussion:

The objective of the present study was to evaluate morphological change of placenta in hypertensive pregnant women as well as evaluation of birth weight of the babies of hypertensive mothers. In the current study, the mother's age was 26 + 2.19 years on average. The fetus's mean gestational age was 37±4.41 weeks, and birth weight was 2.3 ±1.53 kg.InKrielessia et al. 2012, the mean gestation age was discovered earlier in

the fetus of hypertensive mothers. It was 35.66±2.88 weeks in cases of mild hypertension and 34.04±3.12 weeks in cases of severe hypertension. Babies in their study had low birth weights as well. Birth weights in cases of mild and severe HTN were 2057.79±631.36 and 1875.35±675.19 grams, respectively.[7] Not only hypertension, the variance in the mean fetal birth weight noted by various researchers may be caused by a number of variables, including the mother's diet, her race, and her socioeconomic situation.[3]

The placenta had an average weight of 340±15.3 grams in this study. Placental weight in hypertensive mother was observed 427±137.67 gram by Krielessia et al. 2012.[7] In pre-eclampsia, placental weight was 395.15±63.40 gram, and in eclampsia, 382.35±75.46 gram observed by Salmani et al. 2014.[8] Vijayalakshmi and SunitaKittali 2015 observed placental weight in their study was 399.10±79.112 in mild pre-eclampsia and 371.70±85.316 in severe pre-eclampsia.[9] The placenta measured in the current study was 16.12±0.47 cm on average. In mild pre-eclampsia, the diameter was 18.64±1.812 cm, and in severe pre-eclampsia, the diameter was 17.94±1.963 cm observed by Vijayalakshmi and SunitaKittali 2015. In their study, the normal placenta measured about 20.33±1.446 cm.[9]

1.94±1.22 cm was the average thickness of the placenta in the center. Salmani et al. 2014 observed the thickness in their study was 2.74±0.28 cm in pre-eclampsia and 2.64±0.25 cm in eclampsia.8 Volume of the placenta in the present study on average, was 310±13.06 ml. Vijayalakshmi and SunitaKittali 2015 found the volume in mild and severe pre-eclampsia was much lower than normal placental volume.[9] The number of cotyledons in a normal placenta is 15-20.The mean number of cotyledons in the present study was 19.33±2.13, and the value is within the normal limit.Salmani et al. 2014 found the number of cotyledons was 21.18±1.48 in normotensive women, 21.21±1.58 in pre-eclamptic women, and 20.24±1.03 in eclamptic women.[8]

In our investigation, all of the variables' measurements except number of the cotyledons were below average. In hypertension, there is reduced blood flow occurs in placenta. Less blood flows to the placenta as a result of increased blood pressure during pregnancy. This may affect the placenta's size, diameter, and volume to decrease and also birth weight of baby .[6,10]

Conclusion:

The current study's findings provided an overview of the placenta's morphology in pregnancy-induced hypertension. Thefetus, placenta and mother constitute triad of contributor to pregnancy outcome. The placental examination will help to understand the specific etiology adverse outcome of the baby, whichwill deal with specific treatment and preventive measures for those with a risk of recurrence in the subsequent pregnancy.

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Original Article

Peak Expiratory Flow Rate Among Children Hospitalized with Respiratory Diseases in A Tertiary Care Hospital

Sayla Chowdhury[1], Mahbuba Sultana[2], Mir Iftekhar Mostafiz[3]

Abstract:

Background: Obstructive airway disease e.g. bronchial asthma is a very common childhood respiratory problem. A peak flow meter (PFM) is a device used to detect obstructive lung disease to measure the control of asthma as well as the detection of asthma in both symptomatic and asymptomatic patients and is important for the management of bronchial asthma. Peak expiratory flow rate (PEFR) is the maximum flow rate generated during a forceful exhalation by the subject, starting from full lung inflation. PEFR is actually the measurement of lung volume. The rationale of the Study is there are some original articles on PEFR in children on an outdoor basis but there is a scarcity of original articles on this topic of hospital-admitted patients. This study will act as a reference for future diagnosis and assessment of treatment outcomes for obstructive lung diseases in children. **Methods:** After taking consent from informed parents, data was collected in a structured data collection sheet. All admitted children in pediatric pulmonology unit CMH Dhaka, aged 5 years to 12 years enrolled in this study. Children with congenital malformations, and co-morbidities such as congenital heart disease, GIT problems, hematological problems, and malignancy were excluded from this study. The objective of this study was to find out lung volume by measuring the peak expiratory flow rate (PEFR). The study period was July 2020 to December 2020. The sample size was 200. A lightweight standard peak flow meter (Mini Wright peak flow meter) is used. **Results:** Total 200 patients were included in this study. Out of them boys were 119 (59.5%) and 81 (40.5%) were girls. Overall mean age was 8.14(±2.06) years, mean weight was 31.6(±10.7) kg, mean height was 130.9(±16.5) cm and mean PEFR was 209.2(±51.7) L/min. In boys mean age was 7.9(±2) years, weight was 31.3(±10) kg, mean height was 130.4(± 13.6) cm and mean PEFR was 210.6(±58) L/min. In girl mean age was 8.4(±2) years, weight was 31.9 (±10) kg, mean height was 131.4(± 12.8) cm and mean PEFR was 206.9(±51) L/min. According to gender variation PEFR is slightly higher in boys than girls. The admitted patients were Upper respiratory tract infection (URTI) 48.5%, bronchial asthma 19.5%, bronchopneumonia 6%, lobar pneumonia 2.5%, pleural effusion 3%, tuberculosis 6%, Reactive Airway Disease (RAD) 2.5%, croup 2.5%, and others 9.5% (foreign body aspiration, cystic fibrosis, and bronchiolitis obliterans, bronchiectasis. Regarding PEFR, 144(72%) patient falls in green zone, 48(24%) falls in yellow zone and 8(4%) patient falls in red zone according to peak flow metry. Among 48 patients, who falls in yellow zone, 29(60%) were bronchial asthma, 7(15%) pneumonia, 6(12.5%) tuberculosis and others 6(12.5%). Majority cases were bronchial asthma. Among bronchial asthma majority (45%) was moderate persistent variety. Among red zone cases 6(75%) were severe persistent bronchial asthma, 1(12.5%) bronchiolitis obliterans, 1 (12.5%) cystic fibrosis. Regarding family history among 39 bronchial asthma patients 24(61.3%) had positive family history of bronchial asthma, 04(10.25%) had history of allergic rhinitis, 03(7.69%) had history of atopy and 02(5.12%) had history of passive smoking. But 06(15.38%) had no significant family history. **Conclusion:** Peak expiratory flow rate in children is varies by different factors, e.g. boys has a slight higher rate than girls. Obstruction of the airway due to any cause affects the PEFR in children. Among obstructive causes bronchial asthma is the most common cause of decreased PEFR in hospitalized children with respiratory problems. After all this is a small study. Further large-scale study is required to reach a conclusion.

Keywords: Peak expiratory flow rate (PEFR), Respiratory disease, children

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Introduction:

The measurement of peak expiratory flow rate (PEFR) remains a valuable indicator of pulmonary function. Respiratory diseases represent the most common cause of death in children worldwide. Peak expiratory flow rate is a reliable way of judging the degree of respiratory diseases especially airway obstruction in various obstructive lung diseases. The PEFR is an effort-dependent parameter, emerging from the large airways within about 100-120 msec of the start of forced expiration. It remains at its peak for 10 msec.[1] Peak expiratory flow is the maximum flow rate generated during a forceful exhalation, starting from full lung inflation. It primarily reflects large airway

flow and depends on the voluntary effort and muscular strength of the subject.[2] Many chronic pulmonary diseases of childhood that are frequently encountered result in varying degrees of obstruction to the flow of air within the tracheobronchial tree. Hence, efficient techniques are required for assessing functional derangement and evaluating the results of various therapeutic regimens; estimation of the severity of airway obstruction is vital. Direct measurement of airway resistance is frequently used in physiologic studies.[3] National Asthma Education and Prevention Program Expert Panel Reports and Global Initiative for Asthma guidelines recommend the PEFR.[4, 5] This procedure is easy to learn, simple to perform, and is reproducible. The main factors affecting PEFR are: age, sex, weight, and height[6]. There has been increasing evidence that in addition to age, sex, and height differences for PEF, there are lung function differences among people of different races.[7] Most children older than five years can measure PEF by using one of several available peak flow meters[8]

Rationale of the study:

There are some original articles on PEFR in children in outdoor basis but there is scarcity of original article on this topic in hospital admitted patients. In our country this study will act as reference for future diagnosis and assessment of treatment outcome for obstructive lung diseases in children research in this aspect.

Methods:

After taking consent from informed parents, data collected in a structured data collection sheet. All admitted children in pediatric pulmonology unit CMH Dhaka, aged 5 years to 12 years enrolled in this study. Children who had congenital malformations, co-morbidities such as congenital heart disease, GIT problems, hematological problems, malignancy excluded from this study. Objective of this study was to find out the lung volume by measuring the peak expiratory flow rate (PEFR).Study period was July 2020 to December 2020. Sample size was 200. A lightweight standard peak flow meter (Mini Wright peak flow meter) is used. Diagnosis, height weight, gender recorded. After proper explanation of the procedure, patients instructed to take a deep breath and blow into the mouthpiece as quickly as they can and repeated it three times. Among three highest value was recorded. PEFR measured by using the formula - Children PEFR = ((Height in cm - 100) x 5) + 100.

The value compared with a standard PEFR chart for children and categorized them as green, yellow and red zone. Green zone (Safe zone) - 80-100% of personal best result. Yellow zone (Zone of alert)- <80%->50% of personal best result and Red zone (Zone of emergency) - <50% of personal best result. Ethical clearance taken from institutional ethical committee. Data were recorded and analyzed by Microsoft Excel , MINITAB and presented by chart, diagram and table.

Results: Total 200 patients were included in this study. Out of them boys were 119 (59.5%) and 81 (40.5%) were girls (figure-1).

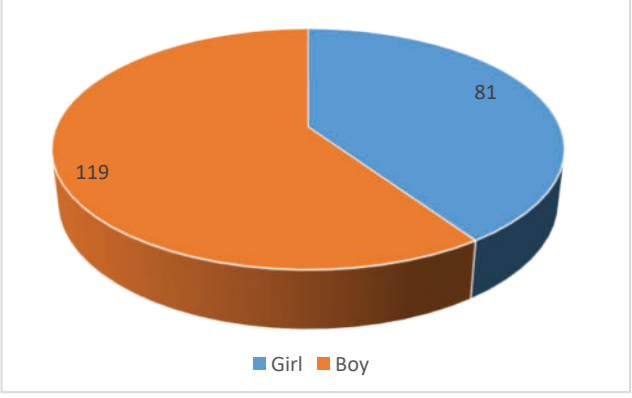


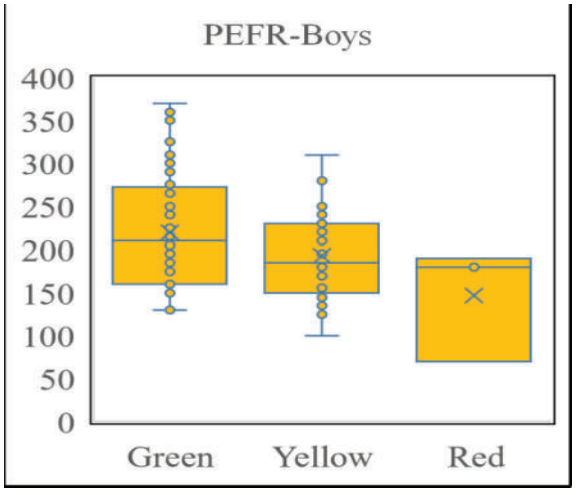
Figure-1: Distribution of sex

Overall mean age was 8.14(±2.06) years, mean weight was 31.6(±10.7) kg, mean height was 130.9(±16.5) cm and mean PEFR was 209.2(±51.7) L/min. In boys mean age was 7.9(±2) years, weight was 31.3(±10) kg, mean height was 130.4(± 13.6) cm and mean PEFR was 210.6(±58) L/min. In girl mean age was 8.4(±2) years, weight was 31.9 (±10) kg, mean height was 131.4(± 12.8) cm and mean PEFR was 206.9(±51) L/min. (Table-2).

Table-I: Statistics of age, weight, height and PEFR according to gender

	Boys				Girls			
	Age	Weight	Height	PEFR	Age	Weight	Height	PEFR
Mean	7.95042	31.3697	130.4831	210.64	8.4296	31.938	131.42	206.95
Standard Error	0.1874	0.971	1.2500	5.3224	0.229	1.215	1.432	5.696
Median	8	30	128	206	8.5	30	134	195
Mode	8	34	140	160	9	35	125	175
Standard Deviation	2.044	10.5989	13.636	58.061	2.064	10.94	12.891	51.26
Samplev ariance	4.1808	112.3367	185.953	3371.14	4.2603	119.75	166.18	2628.52
Kurtosis	-0.8045	0.07136	-0.2145	-0.2386	-1.207	-0.260	-1.05	0.77
skewness	0.3660	0.7560	54	0.4476	0.1737	0.6590	0.1707	0.57
Range	7	47	106	300	7	44	49	275
Minimum	5	13	106	70	5	16	111	85
Maximum	12	60	160	370	12	60	160	360
Total	119	119	119	119	81	81	81	81

According to gender variation PEFR is slightly higher in boys than girls- fig-2



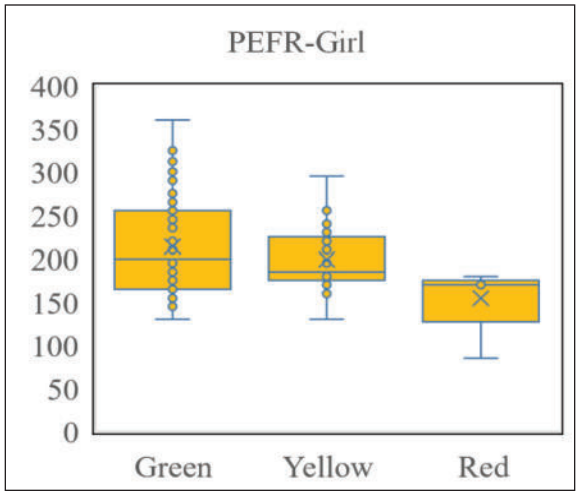


Fig-2: Distribution of PEFR in boys and girls.

The admitted patients were Upper respiratory tract infection (URTI) 48.5%, bronchial asthma 19.5%, bronchopneumonia 6%, lobar pneumonia 2.5%, pleural effusion 3%, tuberculosis 6%, Reactive Airway Disease (RAD) 2.5%, croup 2.5%, and others 9.5% (foreign body aspiration, cystic fibrosis, and bronchiolitis obliterans, bronchiectasis (Fig-3).

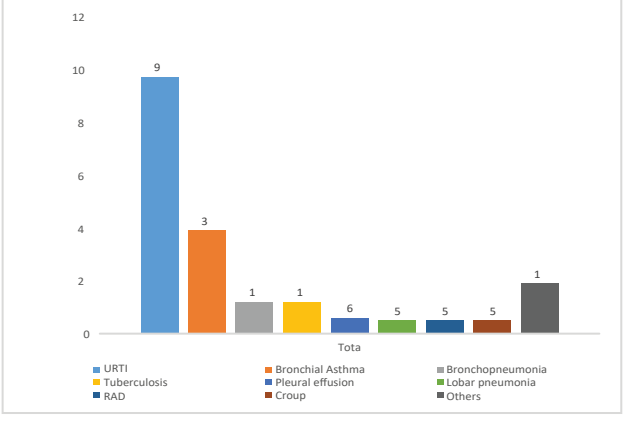


Figure-3: Pattern of admitted cases.

Regarding PEFR, 144 (72%) patient falls in green zone, 48(24%) falls in yellow zone and 8(4%) patients falls in red zone according to peak flow metry (fig-4).

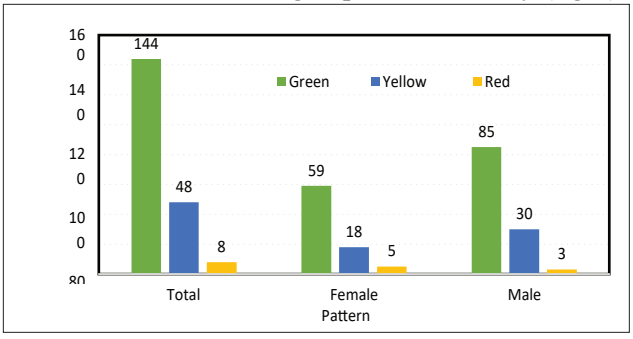


Fig-4: Distribution of PEFR zone.

Among 48 patients, who falls in yellow zone, 29(60%) were bronchial asthma, 7(15%) pneumonia, 6(12.5%) tuberculosis and others 6(12.5%).Majority cases were bronchial asthma.

Table-II: Distribution of yellow zone diseases

Type of illness	Number	Percentage
Bronchial asthma	29	60%
Pneumonia	7	15%
Tuberculosis	6	12.5%
Others	6	12.5%

Among bronchial asthma majority was moderate persistent variety (Fig-5).

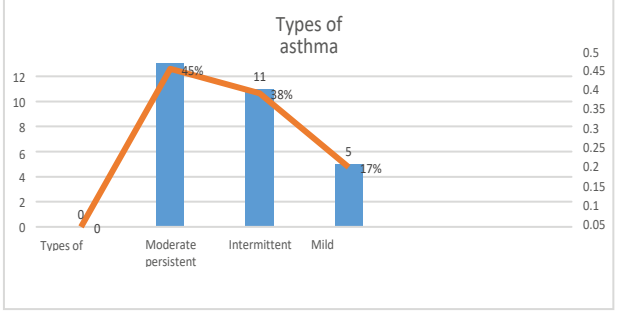


Fig-5: Distribution of Bronchial asthma, which falls in yellow zone

Among red zone cases 6(75%) were severe persistent bronchial asthma, 1(12.5%) bronchiolitis obliterans, 1 (12.5%) cystic fibrosis (Figure-6).

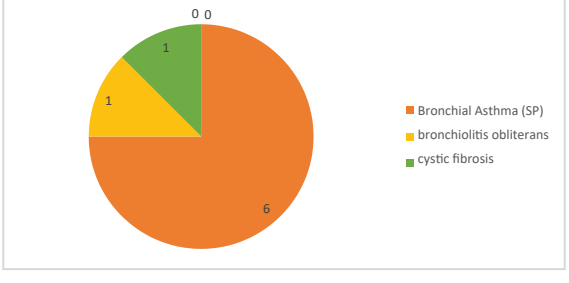


Figure-6: Distribution of red zone cases.

Regarding family history among 39 bronchial asthma patients 24(61.3%) had positive family history of bronchial asthma, 04(10.25%) had history of allergic rhinitis, 03(7.69%) hadhistory of atopy and 02(5.12%) had history of passive smoking. But 06(15.38%) had no significant family history (Table-3).

Table-III: Relevant family history of bronchial asthma patients

Relevant family history	No. of patient	Percentage
History of bronchial asthma	24	61.53%
History of allergic rhinitis	04	10.25%
History of atopy	03	7.69%
History of passive smoking	02	5.12%
No significant history	06	15.38%

Discussion:

In this study 59.5% were boys and 40.5% were girls. Similar findings, 51% were boys and 49% were girls found in one study.[9] Overall mean age was 8.14 (±2.06) years, mean weight was 31.6 (±10.7) kg, mean height was 130.9 (±16.5) cm and mean PEFR was 209.2(±51.7) L/min. In boys mean age was 7.9 (±2) years, weight was 31.3 (±10) kg, mean height was 130.4(± 13.6) cm. In girl, mean age was 8.4 (±2) years, weight was 31.9 (±10) kg, mean height was 131.4 (± 12.8) cm. Ramamani D et al. showed the PEFR mean value of boys and girls study population was 169.53±37.38 and 146.24±33.01 respectively.[10] In this study mean PEFR was 210.6(±58) in boys and mean PEFR was 206.9 (±51) L/min in girls. Which is similar to this study. The admitted patients were Upper respiratory tract infection (URTI) 48.5%, bronchial asthma 19.5%, bronchopneumonia 6%, lobar pneumonia 2.5%, pleural effusion 3%, tuberculosis 6%, Reactive Airway Disease (RAD) 2.5%, croup 2.5%, and others 9.5% (foreign body aspiration, cystic fibrosis, and bronchiolitis obliterans, bronchiectasis. Rakshit et al. also showed in his study that admitted patients were bronchopneumonia 48.8%, followed by bronchiolitis 22.6%, asthma 113.1%, wheezy child 8.4%, URTI 5.3%, laryngomalacia 1.4% and tuberculosis 0.4%. Which is similar to this study.[11] In this study regarding PEFR, 144 (72%) patient falls in green zone, 48 (24%) falls in yellow zone and 8(4%) patient falls in red zone according to peak flow metry .

Mehta et al. found that the observed PEFR value of 91 cases was above 80% of the predicted value (no obstruction in airways) while 9 children had observed PEFR values below 80% of the predicted value (suggestive of narrowing of airways). Of these, 4 had PEFR values more than 75%of the predicted value; 3 had values between 65%-75% of the predicted values and 2 had PEFR values below 65% of the predicted value. The lowest observed PEFR was 56.2% of the predicted value.[12] In this study Among yellow zone 29 (60%) were bronchial asthma, 7 (15%) pneumonia, 6 (12.5%) tuberculosis and others 6 (12.5%). Asthma was the common problem for decreased PEFR. Sree Krisna et al. showed that lower respiratory tract infection can cause decreased PEFR. It is similar to this study.[13] In this study, the common cause of decreased PEFR is asthma. Mehta et al. showed asthma causes decreased PEFR. It is similar to this study.[12] Regarding family history among 39 bronchial asthma patients who has reduced PEFR, 24 (61.3%) had positive family history of bronchial asthma. Many studies have shown that family history of asthma and allergy increases the risk of asthma in children.[14] Mehta et al. showed 19.14%) children from asthmatic families has PEFR values <80% of the predicted value. In this study 61.3% child has positive family history who has <80% of PEFR of predicted value. This corresponds to that study.[15].

Conclusion:

Peak expiratory flow rate in children is varies by different factors, eg male has a slight higher than female. Obstruction of the airway due to any cause affects the PEFR in children. Among obstructive causes bronchial asthma is the most common cause of decreased PEFR in hospitalized children with respiratory problems. After all this is a small study. Further large-scale study is required to reach a conclusion.

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Original Article

A Comparative Study Between Non-Descent Vaginal Hysterectomy and Total Abdominal Hysterectomy

Shirin Akhter[1], Parveen Akter[2], M Kamal Hossain[3], Nasrin Akhter[4], Afroja Khanom[5]

Abstract:

Background: Hysterectomy is one of the most common gynaecological surgeries performed world wide. Removal of the uterus through vagina when performed in a case for benign Gynaecological conditions without uterine descent or prolapseis known as Non-Descent Vaginal Hysterectomy (NDVH). NDVH appears to be less invasive, safe, faster recovery and economical surgeries than abdominal hysterectomy especially in resource-crunched developing country. **Aim:** The aim of this study is to compare the most efficient route of hysterectomy in women with mobile non-prolapsed uterus of 12 weeks or lesser between the intraoperative and postoperative complications of NDVH and abdominal hysterectomie s. **Methods:** This Prospective randomized controlled trial was conducted over a period of one year in the department of Obstetrics & Gynaecology in Cumilla Medical College Hospital, Bangladesh from July 2021-June 2022. A total of 60 patients requiring hysterectomy for benign diseases were analyzed. Group A (n=30) underwent non descent vaginal hysterectomy (NDVH) which was compared with group B (n=30) who had abdominal hysterectomy (TAH). Indications of surgery, co-morbid conditions, operative time, intraoperative blood loss, postoperative analgesia, hospital stay, postoperative mobility, blood transfusion, wound infection, febrile morbidity and postoperative systemic infections were compared between two groups. The statistical package SPSS 20 was used for data analysis. **Results**: The most common age in both groups was 46-50 years. All patients were parous. Size of the uterus was less than 12 weeks. Adenomyosis was the most common indication of surgery in both groups. The mean operative time in NDVH group was 30.70 minutes while it was 60.99 minutes in TAH group. Blood loss in NDVH group was 50.85 ml, while it was 317.90 ml in TAH groups. $p<0.0001$ when intraoperative blood loss & operative time were compared between two groups. In NDVH cases, no intraoperative complications were found suggesting low morbidity. In NDVH Postoperative pain was the most common complications seen in 6.66% cases while in TAH it was 14.16%.Febrile morbidity was seen in 53.33% cases of TAH and no fever was seen in NDVH. In NDVH about 70% of patients were discharged on post operative day 2 and in TAH group 73% cases were discharged on day 4. None of the cases in the vaginal group were converted to abdominal route and none of the cases in the whole study group underwent re-laparotomy. **Conclusion:** With adequate vaginal access, good uterine mobility & technical skill, NDVH can safely be performed on a non-prolapsed uterus. It has an additional advantage of shorter duration of surgery, intraoperative comp lications, postoperative morbidity, & shorter hospital stay. So, it is a better surgical alternative to abdominal hysterectomy.

Keywords: Non-descent vaginal hysterectomy, Abdominal hysterectomy, Intraoperative complications, Postoperative outcome

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Introduction:

Hysterectomy is the second most common operation performed by the Gynaecologists[1,2], next only to Caesarean Section. It can be done through abdominal, vaginal and laparoscopic routes[3]. Conventionally vaginal hysterectomy is done for uterovaginal prolapse & abdominal route is performed in most of other indication. NDVH has proved to be feasible, safe,

cost-effective & justifiable option in comparison to abdominal route. Despite multiple studies stating that vaginal route is preferred to abdominal route in mobile uterus of 12 weeks or lesser, ACOG committee opinion is the only formal guideline establishing the fact[4]. Traditional abdominal and vaginal hysterectomies represent the most and least invasive techniques respectively. Though non-descent Vaginal Hysterecto my is a more difficult procedure due to limited surgical exposure but it is rewarding for the patient. It has a clear advantage over the abdominal route in obese women [5,6]. However, proper selection of patients is a critical factor in determining the success of vaginal procedures. Lack of expertise and the curve in learning the technique also has major impact on the number of procedures performed [7,8].

Methods:

This Prospective randomized controlled trial was conducted over a period of one year in the department of Obstetrics & Gynaecology in Comilla Medical College Hospital, Bangladesh from July 2021 – June 2022. A total of 60 patients requiring hysterectomy for benign diseases were analyzed. Group A (n = 30) under went non descent vaginal hysterectomy (NDVH) which was compared with group B (n = 30) who had abdominal hysterectomy (TAH).Patients requiring hysterectomy were selected from the Outpatient Department. After admission detailed history wastaken, general and systemic examinations was performed and Confounding variables was strictly controlled by following inclusion and exclusion criteria. Thus 60 patients requiring hysterectomy for benign uterine conditions were analysed over a period of 1 year. Patients were alternately allocated to NDVH and abdominal groups. Group A (n = 30) underwent non-descent vaginal hysterectomywhich was compared with group B (n = 30) who had abdominal hysterectomy. Informed, written consent was taken from all the patients after explaining the risks and benefits associated with the procedure. Approval of ethical committee was also taken.

Inclusion Criteria:

1. Uterine size up to 12 weeks gestation.
2. Non-Prolapsed uterus.

Exclusion Criteria:

1. Uterine size more than 12 weeks.
2. Complex ovarian cyst (>8 cm).
3. Any degree of uterine descent.
4. Restricted mobility of uterus.
5. Suspicion of genital malignancy.
6. Any existing significant bleeding diathesis.

Operative Techniques:

In the total abdominal hysterectomy group, Pfannenstiel incision was made, abdomen opened in layers, uterus was elevated out of the pelvis by applying Kocher's clamps to the side of uterine cornu bilaterally. Bilateral clamps were applied to the round and tubo-ovarian ligaments (to the infundibulo-pelvic ligaments if ovariotomy was planned), cut and ligated. Uterovesical fold was opened and bladder mobilized to the lower limit of cervix. Then subsequential clamps were applied to the uterine artery and mackenrodt's - uterosacral ligaments bilaterally, clamped, cut and transfixed. Uterus delivered out and vault closure done. After securing haemostasis, abdomen was closed in layers[9]. In the vaginal group, labial sutures were applied, bladder evacuated. Holding the cervix with vulsellum, transverse incision was made on anterior vaginal wall. Deepening the incision, the pubo-vesico-cervical ligament was reached and incised. Pushing the bladder up with steady traction, Uterovesical peritoneum was visualized and was incised and incision extended. After opening the Pouch of Douglas, bilateral Mackenrodt's-Uterosacral ligaments were clamped, cut and transfixed, the same procedure was followed for uterine artery and fundal structures followed by vault closure[10].

All patients were given prophylactic Inj. Ceftriaxone on operation table just before skin incision. The operating time was noted from time of incision till the end of the procedure. To measure intraoperative blood loss, weight of swab in the dry and blood-soaked states was measured and 19 mg weight difference was equted to 1ml blood loss. Temperature was assessed and charted 4 hourly, defining Febrile Morbidity as 38°C on 2 occasions 4 hours apart, excluding the first postoperative day. Patients were routinely given injectable analgesics on day 1 twice. After this, patients were given oral analgesics and the total number of days of analgesic requirement was noted. Intraoperative blood loss and injuries, postoperative pain, blood transfusion, mobility, febrile morbidity, infections, hospital stay, conversion to abdominal route, re-laparotomy were recorded and the data was statistically analysed and p-value was determined.

Result:

Baseline demographic characteristics were comparable in both abdominal and vaginal hysterectomy groups. Table 1 shows the most common age in both groups was 46-50 years. Table 2 depicts all patients were parous. Table 3 reveals size of the uterus was less than 12 weeks. Table-4 shows that AUB-A is the most common cause of hysterectomy in both groups. In the vaginal group, 26.6% (n=30) had undergone concurrent

salpingo-ophorectomy, whereas 56.66% in the abdominal group (n=30), had undergone concurrent salpingo-ophorectomy, as shown in Table-5. Table 6 reveals[7].11% of the patients in the vaginal group had previous pelvic surgeries while 8.33% of the patients in the abdominal group had history of pelvic surgery (e.g., tubal ligation, ovarian cystectomy or laparotomy). 40% of patients in vaginal group had co-morbidities like hypertension, diabetes mellitus, bronchial asthma, ischemic heart disease and anaemia while 20% are in abdominal group. Table 8 shows the mean duration of surgery was 30.70 minutes in the vaginal group, whereas, it was 60.99 minutes in the abdominal group, implying a significant difference ($p< 0.0001$). Similarly, a significantly higher blood loss (317.90 ml) was noted in the abdominal hysterectomy group, compared to 50.85 ml in the vaginal group ($p< 0.003$). Postoperatively, the abdominal group required more analgesia in comparison to the vaginal group as measured by number of days requirement of analgesics postoperatively as shown in [Table 8]. In NDVH, analgesic requirement was 2 days while in TAH it was 4.25 days. In NDVH about 70% of patients were discharged on post operative day 2 and in TAH group 73% cases were discharged on day 4. Mean time to postoperative mobility and mean maximum postoperative body temperature in the vaginal hysterectomy group were significantly shorter and less severe respectively than those in the abdominal group ($p<0.0001$). Significantly lesser number (6.66%) of patients required postoperative blood transfusion in the vaginal group compared to the abdominal group (50%). Significantly high postoperative wound infection rate was noted in 60% of patients in the abdominal group, compared to 0% in the vaginal groups. However, there was no significant difference in the rates of systemic infection like respiratory tract infection, urinary tract infection, paralytic ileus and acute gastroenteritis postoperatively in both the groups.

None of the cases in the vaginal group were converted to abdominal route. There were no intraoperative complications such as bladder, rectum or urethra injuries or re-laparotomies in any groups.

Table-I: Distribution of patients according to Age-Group

Age group	NDVH(%)	TAH(%)
36-40	3 (10%)	4 (12%)
41-45	10 (34%)	11 (36%)
46-50	15 (50%)	13 (44%)
>50	2 (6%)	2 (8%)
Total	30	30

Table-Ishows the most common age in both groups was 46-50 years.

Table-II: Distribution of patients according to Parity

Parity	NDVH(%)	TAH(%)
1	1 (4%)	2 (8%)
2	7 (24%)	5 (16%)
3	6 (20%)	10 (32%)
4	12 (40%)	11 (36%)
5	4 (12%)	2 (8%)
Total	30	30

Table-II shows all patients were parous.

Table-III: Size of Uterus during P/V examination

Size of uterus	NDVH	Abdominal hysterectomy
Normal	1	1
Bulky	4	2
6-8 weeks	10	12
9-10 weeks	8	8
11-12 weeks	7	7
Total	30	30

Table-III reveals size of the uterus was less than 12 weeks.

Table-IV: Distribution of patients according to diagnosis

Diagnosis	NDVH(%)	TAH(%)
AUB-A	10 (32%)	14 (46.67%)
AUB-L	9 (28%)	8 (26.67%)
AUB-O	7 (24%)	5 (16.67%)
AUB-P	2 (8%)	1 (3.33%)
CIN	1 (4%)	1 (3.33%)
Chronic Cervicitis	1 (4%)	1 (3.33%)
Total	30	30

Table-IV shows that AUB-A is the most common cause of hysterectomy in both groups.

Table-V: Distribution of patients according to their Salpingoophorectomy

Salpingo-ophorectomy	NDVH(%)	TAH(%)
No	26.67%	56.66%
Yes	73.33%	43.34%
	Tot: 30	Tot: 30

Table-V shows, in the vaginal group, 26.6% had undergone concurrent salpingo-ophorectomy, whereas 56.66% in the abdominal group .

Table-VI: No. of patients with previous pelvic surgeries

Pelvic Surgery	Vaginal Hysterectomy	Abdominal Hysterectomy
Done	7.11%	8.33%
Not Done	92.89%	91.66%
	Tot: 30	Tot: 30

Table-VI reveals 7.11% of the patients in the vaginal group had previous pelvic surgeries while 8.33% of the patients in the abdominal group.

Table-VII: No. of patients with medical illness

Medical illness	NDVH (%)	TAH(%)
Done	40%	20%
Not Done	60%	80%
	Total: 30	Total: 30

Table-7 shows that 40% of patients in vaginal group had co-morbidities while 20% are in abdominal group.

Table-VIII: Intraoperative and Postoperative Outcomes

Factor	NDVH (n=30)		TAH (n=30)		Test of significance	p-value	Statistical significance
Operation Duration	Range (in minutes)	Number of patients	Range (in minutes)	Number of patients	$t = -16.519$	<0.0001	Significant
	28-29 30-31 32-33	8 19 3	58-59 60-61 62-63	5 20 5			
	Range of median: (30-31) Value of median: 30.7		Range of median: (60-61) Value of median: 60.99				
Blood Loss	Range (inmL)	Number of patients	Range (inmL)	Number of patients	$t = 29.004$	<0.003	Significant
	52-53 54-55 56-57	7 20 3	315-316 317-318 319-320	7 18 5			
	Range of median: (54-55) Value of median: 54.85		Range of median: (317-318) Value of median: 317.90				
Post Operative Pain *(days of analgesic necessity)*	Range (in days)	Number of patients	Range (in days)	Number of patients	$t = -44.617$	<0.0001	Significant
	0-1 2-3 4-5	10 19 1	2-3 4-5 6-7	9 17 4			
	Range of median: (2-3) Value of median: 2		Range of median: (4-5) Value of median: 4.25				
Hospital Stays	Days	Number of patients	Days	Number of patients	$X^2 = 60$	<0.0001	Significant
	2 3 4 5	21 9 0 0	2 3 4 5	0 0 22 8			
Post Operative Mobility	Days	Number of patients	Days	Number of patients	$X^2 = 60$	<0.0001	Significant
	2 3 4	30 0 0	2 3 4	0 9 21			
Post Operative Blood transfusion	Number ofunits	Number of patients	Number ofunits	Number of patients	$X^2 = 13.871$	<0.0001	Significant
	0 1	28 2	0 1	15 15			
Post Operative Wound Infection	Did Occur	Number of patients	Did Occur	Number of patients	$X^2 = 15$	<0.0001	Significant
	No Yes	30 0	No Yes	18 12			
Febrile Morbidity	Did Occur	Number of patients	Did Occur	Number of patients	$X^2 = 21.81$	<0.0001	Significant
	No Yes	30 0	No Yes	14 16			

Table-VIII shows intraoperative and postoperative outcome was statistically significant in the vaginal group when compared with the abdominal group.

Discussion:

It is well known fact that 70-80% of hysterectomies done for benign condition are through abdominal route. Vaginal hysterectomies are usually performed for prolapsed case. It was due to inadequate technical skills and enlarged uterus makes the vaginal route difficult. But with newer technique like bisection, myomectomy and morcellation, it has become easy to perform vaginal hysterectomy even in enlarged uterus in benign case [11].

Nowadays, vaginal approach to hysterectomy is a preferred method to the gynaecological surgeon. The impetus to extend the advantages and explore the limits of the vaginal route came from hands-on experience with patients who were desperate to avoid an abdominal incision. Vaginal surgery allows the surgeon to operate by the least invasive route of all, utilizing an anatomical orifice. Favourable factors for a non-Descent vaginal hysterectomy are a mobile uterus with normal dimensions, large pelvis to allow manoeuvrability, single, large accessible fibroid, counselling for a tentative vaginal hysterectomy and experience. In case of uteri enlarged due to fibroids, techniques like bisection [12], myomectomy [13], wedge resection [14], slicing method [15], coring [16–18] and use of Ligasure Vessel sealing system [19], may be used either individually or in combination for successful removal of the uterus vaginally. In the absence of obvious contraindications, but with doubt concerning the route of hysterectomy, gynaecologists should consider scheduling patients for a tentative vaginal hysterectomy, a situation analogous to obstetricians performing a trial of forceps. In this study, statistically significant decrease in blood loss during surgery, duration of surgery, postoperative pain, time to postoperative mobility, wound infection, febrile morbidity, length of hospital stay and post operative blood transfusion was noted in the vaginal group when compared with the abdominal group.

Kumar et al., in a study conducted on 80 women planned for NDVH had a success rate of 95% [14]. These patients were treated by vaginal hysterectomy and the operating time, laparotomy conversion rate and intraoperative blood loss was directly proportional to the size of the uterus and concluded that vaginal hysterectomy is a safe and effective procedure in uteri of less than 12 weeks size. Garg et al., conducted a

study comparing vaginal hysterectomy with abdominal hysterectomy with 23 patients in each group and found a reduced operating time, lesser intraoperative blood loss, reduced postoperative morbidity and shorter hospital stay in the vaginal hysterectomy group 20. McCracken et al., in their study concluded that intraoperative and postoperative morbidity were lesser in vaginal hysterectomy compared to abdominal hysterectomy and that vaginal hysterectomy should be the procedure of choice wherever possible [21]. Doucette and co-workers in their study on 250 patients challenged the common contra-indications to vaginal hysterectomy including large uteri, nulliparas, previous CS or laparotomies and concluded that the above-mentioned factors are rarely contra-indications [22].

Nieboer et al., in a systematic Cochrane review of nine RCTs in which studies by Ottosen, Benassi, Hwang, Miskry, Ribeiro, Garry, Silva Filho were included and Nasira and co-workers and Gayak et al., summarized that Vaginal hysterectomy is better in terms of intraoperative and postoperative outcomes, when compared to abdominal, laparoscopic and laparoscopic assisted vaginal hysterectomies [23–32].

In this study, no intraoperative complications occurred in patients of the vaginal group, and no vaginal approach was converted to an abdominal approach. Results were comparable to other studies. All these studies indicate that VH is a safe and effective surgical treatment for benign gynaecological diseases and should be offered whenever possible, considering the low rate of complications and costeffectiveness.

Limitations:

Limitations in the present study include:

1) This is a single (tertiary) hospital-based study and cannot be correlated with general population;
2) Most of the vaginal hysterectomies were carried out by consultant gynaecologists, while abdominal procedures were done equally by consultants and residents;
3) Psycho-sexual implications of both surgeries were not compared;
4) 4) Long term postoperative effects were not taken into account.

Conclusion:

It can be inferred that non-descent vaginal hysterectomy has many advantages which include shorter hospital stay and faster convalescence. It is the least invasive with fewer complications and most economical route for hysterectomy. As day by day the previous contraindications to vaginal hysterectomy are getting out, so every gynaecologist should be familiar with doing non descent vaginal hysterectomy and it should be the gynaecologists' first choice for hysterectomy.

Conflict of Interest: There is no conflict of interest

Funding:

The whole study is self-funding, no financial fund was taken from the Government as well as Private Organization.

Ethical Issue:

The study was approved by ethical review committee of Cumilla Medical College.

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Original Article

Correlation Between Alanine Aminotransferase (ALT) and Ultrasonographic Grades of Fatty Liver in Non-Alcoholic Fatty Liver Disease Patients

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Abstract:

Background: Non-alcoholic fatty liver disease (NAFLD) represents a spectrum of conditions characterized histologically by steatosis, steatohepatit is and cirrhosis whic hoccurs in those who do not consume alcohol. It is associated with not only cellular changes but also it causes biochemical alterations specially different liver enzymes like ALT and AST. So the Objective:To see any correlation between changes in ultrasonographic grades and levels of liver enzymes. **Methods:** A total of 100 patients aged from 18-70 who were sonographycally diagnosed as NAFLD attending the outpatient & inpatient department of Comilla Medical College and Hospital during the period of July 2018 to December 2018. This was a cross sectional study. Data were collected in questionnaire including laboratory investigation reports with informed written consent of patients. Data were presented in graph, pie chart and tabulated form and finally were analyzed by SPSS- 20. Different statistical tests like Chi square test, "t" test and Correlation test was used to analyze and compare different data. **Results:** Majority of our patients were 30-60 (80%) years old (42±11.45 years) which indicate that our patients were somewhat younger. Of the 100 patients 6 patients were <30 years age group and 14 were above >61 age group. Among the 100 patients 56 (56%) were female and 44 (44%) patients were male. Male and female ratio was 0.78:1. Nearly half (46%) of the patients were in obesity stage1 (mean=31.2kg/m2), 28% were obesity stage 2 (mean =36.33kg/m2), 20% were overweight (mean=27kg/m 2) and 6% patients had normal body weight (mean=24. 6kg/m2). Of the 100 patients 50(50%) patients had significant dyslipidemia. Out of 100 patients, 71(71%) patients were in NAFLD grade 1 and 26(26%) were in grade 2. Only 3(3%) patients were in grade 3. Among the 100 patients ALT 67 ± 23.5, was found high in overweight group. Among the 100 patients of ALT was found 55 ± 32.3 in patients who had high systolic blood pressure and those who had normal SBP had ALT level 48 ± 14.6 which was statistically significant (p = 0.02). Among the 100 patients ALT 61 ± 12.7, was found high in patients with Grade 3 and in Grade 2 it was 57 ± 33.4. ALT level were found high among moderate and severe ultrasonographic grades of fatty liver (Grade-1 & Grade-2 group) and this correlation were found statistically significant. **Conclusion:** There are statistically significant correlation of liver enzymes specially ALT (p<0.05) with sonographic grading of NAFLD and also with other metabolic markers.

Keywords: NAFLD, alanine aminotransferase (ALT).

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Introduction:

Non-alcoholic fatty liver disease (NAFLD) encompasses a spectrum of liver disorders characterized by macrovesicular hepatic fat accumulation alone (steatosis), or accompanied by signs of hepatocyte injury, mixed inflammatory cell infiltrate, and variable hepatic fibrosis (non-alcoholic steatohepatitis, NASH), through to cirrhosis that occurs in the absence of alcohol consumption. It is associated with the development of hepatocellular carcinoma (HCC), a significant proportion of which

develops from 'cryptogenic cirrhosis', believed to represent the end stage of previously undetected NASH.[1-11]

NAFLD affecting 20-40% of the general population and recent studies indicate that fatty liver is an emerging problem in the Asia-Pacific region. Large population based surveys in China, Japan, and Korea indicate that the prevalence of NAFLD is now 12% to 24% in population subgroups.[12] The 'typical' patients is likely to have one or more metabolic disorders associated with insulin resistance, such as central or overall obesity, type 2 diabetes mellitus (T2DM), hypertension, dyslipidemia, or metabolic syndrome[13].

Patients with NAFLD and NASH are commonly characterized by elevated circulating concentrations of markers of liver injury including aspartate aminotransferase (AST) and alanine aminotransferase (ALT)[14,15,16]. Usually ALT or AST are elevated in the range of a two to fivefold elevation[17,18]. Incontrast to alcoholic liver disease, the ALT is normally higher than the AST. The AST/ALT ratio is reported to be less than 1 in 65% to 90% of NAFLD patients[19]. In fact, NAFLD and NASH have been reported to be the most common causes of chronically elevated transaminase levels[20]. These observations indicate that AST, ALT, and other markers of liver injury may be useful surrogate measures of NAFLD and related conditions for large studies.[20-25]

Liver biopsy is the gold standard for diagnosis of NAFLD; but the procedure is invasive and carries a definite risk of occasional complications such as, hemorrhage and even death.[26] Moreover, Ultrasonography has proven to be a sensitive, accurate and convenient diagnostic tool in detecting steatosis: its sensitivity ranges from 60% to 94% and its specificity from 84% to 95%.[27] When the hepatic steatosis reaches 33%, the detection sensitivity is nearly 100%. As reported in the issue of American Journal of Gastroenterology an ultrasonographic scoring system has been demonstrated by Hamaguchi and colleagues ranging from 1 to 3, depending on ultrasonographic findings. The authors reported very high sensitivity (91.7%) and specificity (100%).In fact sonographic rankings have been documented to be compatible with the severity of histological hepatic steatosis.[28]

Methods: This Cross sectional study was conducted in the out-patient, in-patient department of medicine, Cumilla medical college hospital during the period of July 2018 to December 2018. Patients with the NAFLD were asked about history in detail and physical examination were done. Then ultrasonography was done by sonologist to detect fatty liver (In radiology department we have LOGIQ P9 ultrasonography machine made by general electric company, USA). After getting ultrasonographic criteria suggestive of fatty liver, patients were included in the study. After taking the patients consent, his or her blood sample were taken and sent to biochemistry & pathology lab of Cumilla Medical College & Hospital (here we have PICTUS 400 Diatron, a fully automated biochemistry analyzer, made in Hungary) for investigations like Serum ALT, AST, Alkaline phosphatase, HBsAg, Anti-HCV, Lipid profile, CBC, Fasting blood glucose and 2hrs after 75gm of glucose (in absence of history of diabetes). Then the clinical, laboratory and imaging parameters was analyzed and frequencies & descriptive statistics were calculated for qualitative and quantitative variables respectively by a computer based software (SPSS-20). Frequency, percentages and correlations were used to analyse the relation between different variables as per nature of them.

Results:

Majority of our patients were 30- 60(80%) years old (42 ± 11.45 years) of the 100 patients 6 patients were <30 years age group and 14 were above >61 age group.

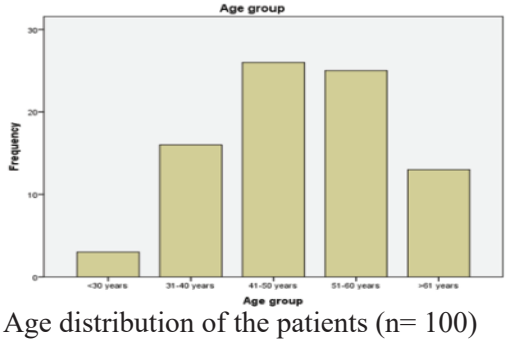


Fig-1: Age distribution of the patients (n= 100)

Among the 100 patients 56(56%) were female and 44(44%) patients were male. Male and female ratio was 0.78:1.

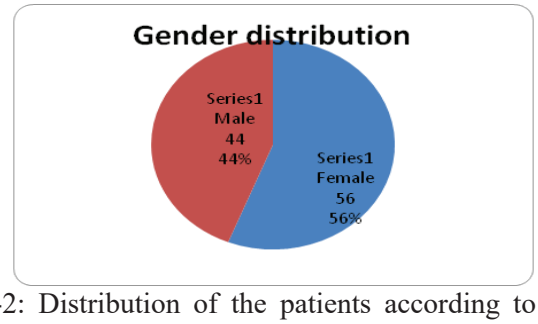
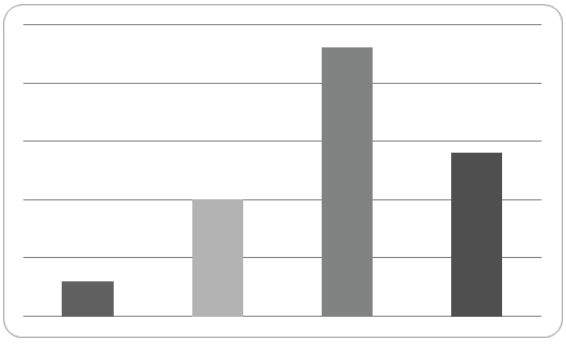


Fig-2: Distribution of the patients according to sex. (n=100)

Based on BMI (Kg/m^2) of the Asian population, the obesity status of the patients was defined. Nearly half (46%) of the patients were in obesity stage-1 (31.2kg/m2), 28% were obesity stage-2 (36.33kg/m2), 20% were overweight (27kg/m2) and 6% patients had normal body weight (24.6kg/m2).



Normal: 18.5-24.9, Over weight: 25-29.9, Obese stag e1-30-34.9, Obese stage 2-35-39.9

Figure-3: BMI of the patients. (n=100)

Out of 100 patients, 71(71%) patients were in NAFLD grade-1 and 26(26%) were in grade -2. Only 3(3%) patients were in grade-3.

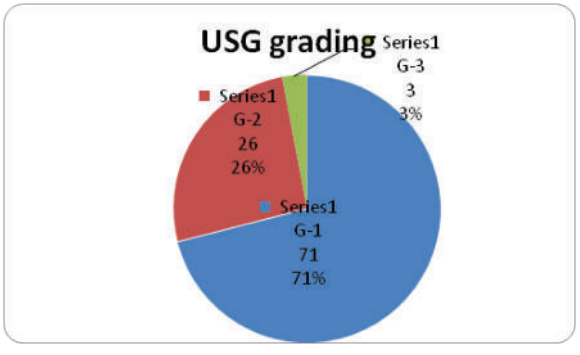


Figure-4: Ultrasonographic grading of NAFLD (n=100)

Table-I: Pattern of liver enzyme according to sonographic gradings among the patients of NAFLD (n=100).

Enzymes	Grade 1 (Mean ±SD) (n=71) (U/L)	Grade 2 (Mean ± SD) (n=26) (U/L)	Grade 3 (Mean±SD) (n=3) (U/L)
ALT	50 ± 21.3	57 ± 33.4	61 ± 12.7
AST	44.6± 16.4	50 ± 14.6	48 ± 26.8
ALP	112 ± 22.5	127 ± 34.4	126 ± 21.7

Among the 100 patients ALT was found high (61 ± 12.7) in patients with Grade 3 and in Grade 2 it was 57 ± 33.4. Other findings are given on the table-I.

Table-II: Relation of liver enzymes with USG grading

Enzymes	Grade-1 N=71	Grade-2 N=26	Grade-3 N=3
ALT	r-0.56 p=0.26	r-0.76 p=0.032	r-0.87 p=0.001
AST	r-0.23 p=0.43	r-0.66 p=0.02	r-0.72 p=0.013
ALP	r-0.21 p=0.65	r-0.87 p=0.012	r-0.91 p=0.023

Correlations of liver enzymes with USG grading revealed Grade 2 and Grade 3 NAFLD were found significantly correlated with raised liver enzymes ($p<0.05$)

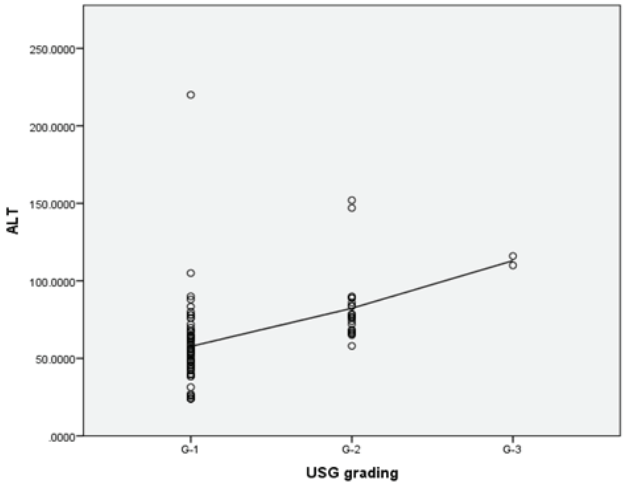


Figure-5: Correlation of ALTand NAFLD grading

Discussion:

In our study female patients of NAFLD were more than the male patients. But in male ALT level was significantly higher than female except for the population 50 years or above. These results indicate that NAFLD in male patients might cause more liver injury. In a study done by Alametal.[29] both males and females were equally affected (P = 0.961) by the fatty changes in liver. However, in rural areas, women were almost 10% more (1.27 times more) prone to developing NAFLD than men. Several hospital-based studies from Bangladesh reported female preponderance of fatty liver in the country. In rural areas, women usually stay at home due to social conservativeness, which causes them to lead a sedentary lifestyle. This might be a cause of female preponderance of NAFLD in rural areas.Among the 100 patients, NAFLD was more predominant among 41-50 years age group. The level of liver enzymes are

changed and ALT is more elevated among this age group which was (59 ± 31.5). Here our patients were somewhat younger than those in previous studies.

BMI has an strong influence over NAFLD. It was found among the patients who were overweight and has obesity stage 1. Overweight patients had ALT level 67 ± 23.5(u/l) which was much higher than normal. AST and ALP were not significantly increased. NAFLD was found in patients with normal BMI, but ALT level was not significantly increased in such patients.

Studies on body fat in Asian have shown that Asians have higher percentages of adiposity at lower BMI than Caucasians. At lower BMI and Waist circumferences increasing risk of obesity related cardiovascular morbidity was found in Asian.Correlations of liver enzymes with USG grading revealed Grade 2 and Grade 3 NFALD were found significantly correlated with raised liver enzymes specially ALT($p<0.05$).

42 (50.6%) patients out of 83 had dyslipidemia. Of them who had more triglyceride level had ALT level of 61 ± 12.7(u/l) which was significantly high. Patients who had both TG and total cholesterol level raised had ALT level 60 ± 31.8 (u/l). 8(16%) patients of NAFLD had normal fasting lipid profile and one (2%) of them showed significant rise of ALT that was 60u/l.Among the three grades of NAFLD, the prevalence of Grade I was higher in Bangladesh. Although this condition is benign, there may be significant changes in liver, to NASH or cirrhosis, if Grade I progresses to further stages.The limitations of the present study were sample size which was small and the diagnosis of the NAFLD was based on ultrasonography which was not confirmed by liver biopsy, the gold standard for the assessment of liver histology.

Conclusion:

A good number of hospital admitted patients of chronic liver disease are now labeled as cryptogenic. Probably this may be due to NASH related fibrosis in large number of this cryptogenic group. There is significant association of those risk factors and rise of liver enzyme mainly ALT among the sufferers of NAFLD with different grades. ALT level is significantly raised in obese males, diabetic, hypertensive, and dyslipidemic patients of NAFLD. But as sample size is small this may not represent the actual scenario of Bangladesh so a multicenter study with nationally representative sample is needed to get the actual scenario of Bangladesh.

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Original Article

Risk Factor Profile and Hospital Proportion of Acute Myocardial Infarction in Young Adults

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Abstract:

Background: Acute myocardial infarction, a potentially life threatening condition, is one of the leading cause of morbidity as well as mortality in young adults throughout the globe1. Whose risk factors and clinical features are different as compared to older age group. **Objective:** In this study our aim is to assess the hospital proportion of the young patients among the total AMI patients and to evaluate their risk factor profile, which may lead to further improvement in their management. **Methods:** We conducted across-sectional observational study on 1703 patients who got admitted in CCU of a private hospital (Moon Hospital, Cumilla, Bangladesh) from January 2019 to January 2021 with the clinical diagnosis of AMI. Among these patients the proportion of young patients and their risk factors were studied. Results: Among the total number of 1703 AMI patients 4.82% (82) were ≤ 39 years of age, out of the 82 patients 85.4% (70) were male and rest of them were female. Among them age >35 years was 64.6% (70) and age < 35 was 35.4% (29). Major risk factors were according to descending order smoking, dyslipidaemia, obesity and positive family history of heart diseases. Most of the Female 54.5%(6) were on oral contraceptive pill. Conclusion: The number of younger AMI patients were significant among total AMI patients. In young adults AMI is almost exclusively occurs in male and smoking was the most common risk factor.

Keywords: Acute Myocardial Infarction (AMI), Young Adults, Risk factors.

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Introduction:

Young patients with Acute Myocardial Infarction are being found more frequently in recent years[2]. In Bangladesh coronary artery disease as well as AMI has progressively increased during the beginning of this century[2]. Dietary habits, Sedentary lifestyles, Smoking, illicit drug abuse, Increased oral contraceptive use in female are the common causes[3,4,5]. Young patients with STEMI usually think that their chest pain is due to other causes. So they respond lately and get inadequate care[2]. The mean time of presentation after the onset of the symptom was 12.25 hour in a study done in National Heart Foundation Hospital & Research Institute, Dhaka, Bangladesh in 2015[2]. Younger AMI patients have different risk factor profile than older patients[6,7]. Substance abuse, hypercoagulable state, anomalies of the coronary arteries and women with oral contraceptive use contribute in the pathogenesis of AMI in young age[8]. Here a sudden Acute Coronary Syndrome is the first manifestation of Coronary Artery Disease[9,10].

Methods:

We have taken the approval of the ethical committee of Comilla Medical College. This cross sectional observational study was conducted at Moon Hospital, Cumilla from January 2019 to january 2021 on 1703 patient with AMI admitted in CCU.

All patients aged ≤39 years with first STEMI, both male and female were included in the study. We defined Young age as ≤39 years, that is similar to those used by others[11,1]. The exclusion criteria were patients with previous myocardial infarction, history of percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG), valvular heart disease and cardiomyopthy. Patients with other major disorders such as severe renal impairment, cancers, systemic infections and those not willing to provide informed written consent were excluded.

The diagnosis of AMI was established based on the following criteria: a) detection of rise and/or fall of cardiac biomarkers(trop-I) with at least one value above the 99th percentile of the upper reference limit(URL), together with evidence of myocardial ischaemia with at least one of the following: symptoms of ischaemia, ECG changes indicative of new ischemia(new ST-T changes or new LBBB, development of pathological Q wave in the ECG, imaging evidence of new loss of viable myocardium or new regional wall motion abnormality[12]. We studied smoking, diabetes, HTN, obesity (BMI>25kg/m2), sedentary lifestyle, family history of MI, dyslipidemia, substance abuse & OCP as risk factors. Who smoked in the previous 12 months were defined as current smokers. And those who had quit smoking more than a year earlier were regarded as former smoker[13].

Statistical analysis

The collected data were checked and coded manually and then entered into a computer database. The numerical data obtained from the study were analyzed. Data were expressed in frequency, percentage, mean and standard deviation as applicable. Data were analyzed by using computer based SPSS program version 16 for statistical analysis.

Results:

In this study observed that about two third [53(64.6%)] were 35-39 years of age, [22 (26.8%] respondents were in the age group 30-34 years, [6(7.3%] were in 25-29 years and [1(1.2)] was in 19-24 years. The mean (SD) age of the respondents was 34.62 ± 3.5 years with minimum age 22 years and maximum 39 years. Majority [70(85.4%)] respondents were male and [12(14.6%)] were female, Majority of the respondents [52(63.4%)] presented with chest pain and rest of them had no chest pain, [22(26.8%)] patient presented with dyspnea, [35(42.7)] presented with sweating. [13(15.9%)] were restless and [24(29.3%)] were with palpitation. This study showed that [55(67.1%)] were smoker, [27(32.9%)] were nonsmoker, with diabetes mellitus [36(43.9%)] and had dyslipidemia [33(,40.2%)], [5(6.1%)] were in substance abuse, [2(2.4%)] were oral contraceptive pill user, [22 (26.8%)] had family history of ischemic heart diseases and rest of the respondents had no family history of ischemic heart diseases Majority of the respondents were normotensive and only [28(34.1%)] were known case of hypertension. On examination of respondents found that [27 (32.9%)] were obese and [55(67.1%)] were within normal. weight limit, [40(48.8%)] were Sedentary worker and [42(51.2%)] were hard worker. This study also showed that [31(37.8%)] infraction present in inferior wall, [28 (34.1%)] were NSTEMI and [18 (22 %)] were anterior MI, [5(6.1%)] were extensive anterior MI.

Chi-square test revealed that there was significant relationship between age and gender ($\chi 2=18.789$, $p < 0.05$) and significant relationship between smoking and gender ($\chi 2=9.410$, $p < 0.05$), significant relation - ship between ocp and gender ($\chi 2=32.869$, $p < 0.05$), significant relationship between sedentary lifestyle and gender ($\chi 2=13.446$, $p< 0.05$).

Table-I: Demographic characteristics (n=82)

Characteristic	N	%
Male	70	85.4
Female	12	14.6
Age ≥35 year	53	64.6
Age < 35 year	29	35.4

Table-1 shows that among total 82 respondents where 70 (85.4 %) were male and 12(14.6%) were female.

Though according to WHO criteria up to 39 years were taken as young age group, in my study maximum cases were >35 years 53(64.6%) and 29(35.4%) were in age group < 35 years

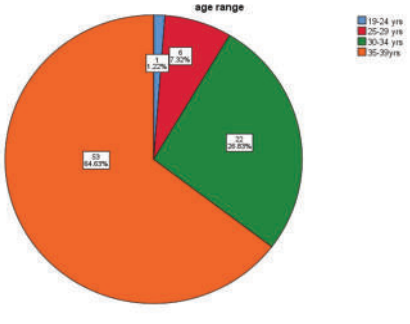

Figure 1; Distribution of respondents according to age

Figure-1 shows that 53 (64.63%) respondents age within 35-39 yrs and 22 (26.83%) age within 30-34 yrs,6 (7.32%) age within 25-29 yrs and 1 (1.22%) age within 19-24 yrs.

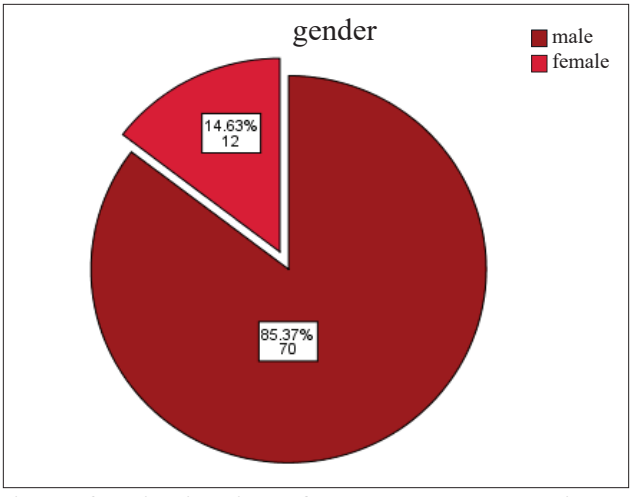

Figure-2: Distribution of respondents according to gender

Figure-2 shows that 70(85.37%) respondents were male and 12(14.63%) respondents were female.

Table-II: Prevalence of risk factors according to sex (n=82)

Risk factors	Patients (N= 82)		Male		Female		P Value
	N	%	N	%	N	%	
Smoking	55	67.07	53	96.36	2	3.63	.001
Diabetes	36	43.90	30	83.33	6	16.66	.439
HTN	28	34.14	24	85.71	4	14.28	.613
obesity	27	32.92	21	77.77	6	22.22	.152
Sedentary lifestyle	40	48.78	31	77.5	9	22.5	.048
Family History of MI	22	26.82	17	77.27	5	22.72	.289
Dyslipidemia	33	40.24	31	96.87	2	2.43	.04
Substance abuse	5	6.097	4	80	1	20	.556
OCP	2	2.43	0	0	2	100	.020

Table-2 shows demonstrates risk factor and sex distribution statistically not significant but smoking, dyslipidaemia, OCP, sedentary lifestyle were statistically significant.

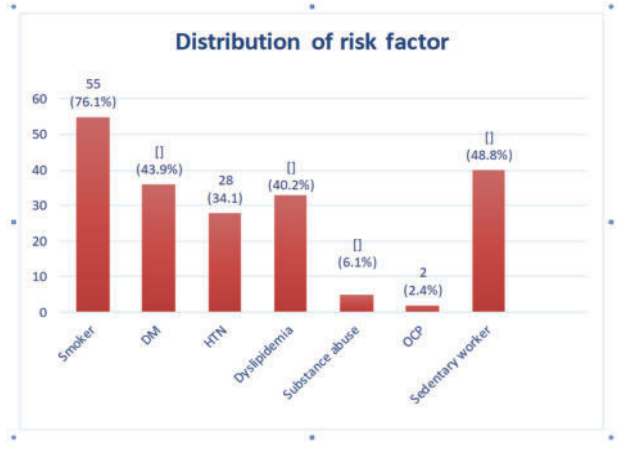

Figure-3: Distribution respondents according to risk factor

Table-III: Association of age with gender.

Age	Patients (N= 82)		Male		Female		P Value
	N	%	N	%	N	%	
35-39	53	64.63	44	83.01	9	16.98	.04
30-34	22	26.82	20	90.90	2	9.09	
25-29	6	27.27	6	100	0	0	
19-24	1	1.21	0	0	1	100	

Table-III shows demonstrates that there were statistical signification relationship between age and gendre.

Table-IV: Pattern of MI (n= 82)

Subject	Patients (N= 82)		Male		Female		P Value
	N	%	N	%	N	%	
NSTEMI	28	34.14	22	78.57	6	21.42	.142
Inferior MI	31	37.80	29	93.54	2	6.45	.142
Anterior MI	18	21.95	16	88.88	2	11.11	.142
Extensive anterior MI	5	6.09	3	60	2	40	.142

Table-IV shows demonstrates that there was no statistically significant relationship between type of infraction and sex.

Table-V: Distribution of Presentation on admission (n= 82)

Symptoms	Number	Percentage
Chest Pain	52	63.4
Sweating	35	42.7
Dyspnoea	22	26.8
Palpitation	24	29.3
Restlessness	13	15.9

Table-V shows that [52(63.4%)] were present with chest pain [35(42.7%)] were in sweating [22(26.8)] were in Dyspnoea, [24(29.3)] were in palpitation, [13(15.9)] were in restlessness.

Discussion:

In this study with AMI in young adults the prevalence of modifiable major risk factors was high except substance abuse. Sex differences in certain risk factors were evident. That is high rate of smoking, dyslipidemia, drug abuse seen in men and higher rate of diabetes, sedentary life style and obesity seen in female, which is similar to another study[14]. The burden of the CHD can be reduced if we alter the modifiable risk factors. Although younger patients with AMI have a family history, 90% of patients in our study had at least one modifiable risk factors most commonly smoking, more than one half had dyslipidemia,

diabetes and sedentary lifestyle. The rate of smoking and diabetes in our study has a trend toward an increase. This finding reveals the increasing trend of these preventable risk factors causing AMI. We found smoking in 67% of AMI patients consistent with a Nepalese study done in 2013[8]. In a study in western Indians min 2019 was similiar1.In China a study in 2021 showed smoking as more frequently observed risk factor which support our study[15]. In another study in Bangladesh. Study in CMH, Dhaka in 2010 showed 64% of patients were smoker[16]. Study in NICVD in 2010-2011 showed higher proportion of smoking 74%[11]. We found 48% patients had sedentary life style, which is supported by a study done in India in 2005[17]. In our study young males had 3.4 times greater chances of developing AMI compared to young females. Which reflect the protective effective of estrogen preventing atherosclerosis demonstrated in epidemiological studies[18].

In another study acute MI in young patient showed a male-female ratio 9:1, which supports our study (5.8 : 1)[19]. Our study shows diabetes in 83% male & 16.6% female which is consistent with a study in Jessore medical college in 2019-2020[20].

Study Limitations:

Our study has some limitations such as we conducted an observational study on limited number of patients in a single hospital. This study did not have any control group and so the risk of each factor could not be analyzed. Also, the statistical significance of the factors could not be analyzed. So further Multicenter longitudinal studies with adequate samples are recommended. Homocystine level was not studied as a risk factor in our study due to lack of lab facility during the period of study. Finally our patients were not evaluated angiographically which might provide better information's.

Conclusion:

AMI in younger age group is increasing. Younger AMI patients had higher prevalence of smoking, sedentary lifestyle, family history, overweight and dyslipidemia, which are preventable risk factors. So, we should adopt a more precise approach for optimal prevention, diagnosis and treatment options. We should focus on health of young adults and their risk factors for heart disease.

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Original Article

Detection of Blood Stream Infection by Sepsis Screen Markers and Blood Culture in Neonatal Sepsis

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Abstract:

Background: Neonatal sepsis contributes significantly to neonatal morbidity and mortality in Neonatal intensive care unit (NICU), despite the advances in neonatal care having reduced complications and improved survival in neonates. Appropriate detection of sepsis is very important for proper management of life threatening of sepsis. In the present study, we wanted to detect blood stream infection by sepsis screen markers and blood culture in neonate presenting with features of sepsis. **Objective:** The present study was undertaken to detect neonatal sepsis by sepsis screen markers and blood culture. We also isolated bacteria and Candida albicans from blood culture. **Methods:** This cross-sectional study was carried out in the Department of Microbiology & Immunology of BSMMU. Blood was collected from 105 clinically suspected cases of neonatal sepsis, who were admitted in the NICU of BSMMU, Dhaka. Blood culture carried out in Department of Microbiology & Immunology, BSMMU. **Results:** In this study, sepsis screen marker positive cases-28 (26.67%) and blood culture positive cases-17 (16.19%) in detection of neonatal sepsis. Most frequently isolated bacteria *Klebsiella* spp, *Acinetobacter* and *C. albicans* were found in 10.47% cases, 4.76% cases and 0.95% case respectively. Pre-term delivery, LBW and VLBW were frequently found in this study. **Conclusion:** Combined use of sepsis screen markers and blood culture are moreeffective in appropriate diagnosis of neonatal sepsis than use of single test. Sepsis screen markers and risk factors of sepsis should be evaluated to exclude contamination of blood culture.

Keywords: Normal vaginal delivery (NVD), Neonatal intensive care unit (NICU), Low birth weight (LBW), Very Low birth weight (VLBW), Pre-mature rupture of membrane (PROM)

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Introduction:

According to WHO, neonatal mortality rate (NMR) is 28/1000 live births in Bangladesh. Neonatal sepsis contributes 36% of total neonatal deaths in Bangladesh, reported by Bangladesh Demographic and Health Survey, 2007[1]. In a study assessing causes of neonatal deaths in rural Bangladesh it is shown that sepsis/ meningitis constituted 12% of direct causes of neonatal deaths[2]. Clinical symptoms and signs of neonatal sepsis are very non-specific and it is very difficult to diagnose. Early and appropriate detection of sepsis and prompt initiation of appropriate treatment are necessary for sepsis management.

Blood culture is still considered as the gold standard for diagnosis of sepsis. But it takes longer time (48-72 hours) and it has a lower sensitivity (42%). Now-a-days, sepsis screen markers such as- total white blood cell count, differential count, total nonsegmented neutrophil count, neuotrophil ratios, platelet count, CRP, ESR, procalcitonin and presepsin are used as in diagnosis of neonatal sepsis. Individually or in combination these markers may be useful in the diagnosis of sepsis, but may be falsely elevated in inflammatory states such as surgery or trauma[3].

This present study was undertaken to detect blood stream infection by sepsis screen markers and blood culture in neonate presenting with features of sepsis. We also evaluated causative agent and risk factors involved in neonatal sepsis for appropriate diagnosis of neonatal sepsis.

Methods:

This crosssectional study was conducted in the Department of Microbiology & Immunology, BSMMU from March 2017 to February 2018. Blood samples were collected from clinically diagnosed neonatal sepsis cases admitted in the Department of Neonatology, BSMMU. Blood culture was carried out in Department of Microbiology & Immunology, BSMMU. According to Management Protocol of Newborn (BSMMU 2016), clinically suspected neonatal sepsis patients presenting with one or more features of sepsis were included for this study[4]. Neonates presenting with feature(s) due to other established cause were excluded from the study.

Blood culture

BD BACTEC PLUS vial (BD BECTON, USA) was introduced into BACTEC 9240 and incubated for 72hrs. After getting positive alarm, blood from vial was sub-cultured in Blood agar and Mac Conkey agar media. Isolation and identification of microorganism was done by colony morphology, gram stain pattern and biochemical test according to the standard method.Germ tube test was done in suspected cases of *C. albicans*.

Sepsis screen markers

White blood cell count, differential count, total nonsegmented neutrophil count, neuotrophil ratios, platelet count, CRP and ESR were used as sepsis screen markers in present study. Data was collected from the patients report file.

According to management protocol of newborn, BSMMU, 2016 sepsis screen marker was considered positive if 2 or more parameters were present.

Absolute neutrophil count<1,500/cmm
Total WBC <5000 or >25,000/cmm
I:T (Immature WBC/Total neutrophil) > 0.2
CRP> 5.0 mg/dL
ESR >15 mm in 1st hour.

Results:

In this study, sepsis screen positive cases-28 (26.67%) and blood culture positive cases-17 (16.19%) in detection of neonatal sepsis. Among 28 sepsis screen positive cases, blood culture was positive in 10 (35.71 %) cases. Among 77 sepsis screen negative cases, 7cases (9.09%) were positive in blood culture. Most frequently isolated bacteria *Klebsiella* spp, *Acinetobacter and C. albicans* were found in 11 (10.47%) cases, 5 (4.76%) cases and 1 (0.95%) case respectively Blood culture is still considered as gold standard test. After evaluation of this study, we found that the percentage of male neonate and caesarean section were higher than the percentage of female neonate and NVD among blood culture positive cases. Here mortality rate was 11.76%.In this study, factors responsible for neonatal sepsis such as pre-term delivery, LBW and VLBW were frequently found.

Table-I: Detection of neonatal sepsisby sepsis screen markers and blood culture (n=105)

Methods	No of cases
Sepsis screen positive	28 (26.67%)
Blood culture Positive	17 (16.19%)
Only sepsis screenpositive	18(17.14%)
Only BloodCulture positive	7 (6.67%)
Both Culture + Sepsis screen positive	10 (9.52%)

Table-II: Distribution of organisms isolated in blood culture (n=105)

Organisms	Total (Percentage)
Klebsiella spp.	11 (10.47 %)
Acinetobacter	5 (4.76%)
C. albicans	1 (0.95 %)
Total	17 (16.19%)

Table-III: Findings between the results of sepsis screen markers and blood culture (n=105)

Sepsis screen positive (2 markers)	Blood culture Positive	Blood culture Negative
Positive (n=28)	10 (35.71 %)	18 (64.28 %)
Negative (n=77)	7 (9.09%)	70 (90.90%)
Total (105)	17 (16.19%)	88 (83.80%)

Table-IV: Percentage of demographic variables and outcome in neonatal sepsis among blood culture positive cases (n = 17)

Findings	Total (Percentage)
Male	52%
Female	48%
Caesarean section	70.6%

NVD	29.4%
Pre-term	51.82%
Term	41.18%
Weight > 2.5 kg	41.18%
LBW	35.25%
VLBW	23.53%
PROM	17.65%
Mortality	11.76%

Discussion:

This study included total 105 cases with clinically suspected neonatal sepsis patients, according to Management Protocol of Newborn (BSMMU 2016)[4]. Study revealed that sepsis biomarkers were positive in 28 (26.67%) cases.Vergnano et al reported that the incidence of neonatal sepsis varies from 7.1 to 38 per 1000 live births in Asia, from 6.5 to 23 per 1000 live births in Africa, and from 3.5 to 8.9 per 1000 live births in South America[5]. Growth in blood culture was found in 17 (16.19%) cases. Whereas in another study of Bangladesh, raha et al reported that the incidence of blood culture was 37.50%. A study of India Sarasam and Geetha revealed that the incidence of blood culture was 21%[6]. In our study, low positive blood culture was possibly due to history of antibiotic exposure before doing culture was around 34.78%. Our study revealed that gram negative bacteria were the commonest cause of neonatal sepsis which was similar to other studies by Rahman et al., (2002) in Pakistan[7]. Among gram negative organisms, *Klebsiella* spp. was isolated in 10.47% *and Acinetobacter* in 4.76% cases. It was noted that application ofbroad-spectrum antibiotics in the past decades has contributedto an increasing incidence of multidrug-resistant gram-negativebacilli (MDR GNB), which account for approximately 20% of bacteraemia cases by Shim et al., 2011. In this study, C. albicans (0.95%) was found which was lower than the study by Shim et al., (2011) (1.5%)[8].

In this study, there was no *Streptococcus* agalactiae which was similar to study reported by Daoud et al., (1995)[9]. It was most possibly due to less colonization of bacteria in pregnant women, less vaginal delivery or use of prophylaxis intrapartum antibiotic. In present study, majority was delivered by caesarean section (70.6%) and history of antibiotic intake by mother was 34.78%.

This study compared between the results of sepsis screen markers (2 sepsis biomarkers) and blood culture among 105 patients. Out of 28 positive sepsis screen positive cases, 10 (35.71 %) cases were also detected sepsis by blood culture.[18] (17.14%) cases were not detected by blood culture, possibly due to antibiotic exposure or less volume of blood intake from neonate. Here, 7 (6.67%) blood culture positive cases were not supported by sepsis biomarkers. For exclusion of contamination, risk factors of sepsis were evaluated to prevent antibiotic resistance. The sensitivity, specificity, positive predictive value and negative predictive value of sepsis screen markers in detecting bacteremia relative to blood cultures were (58.82%), (79.54%), (35.77%) and (90.90%), respectively. Here, $P < 0.05$. So sepsis screen markers were considered as significant test. In present study, it was found that single sepsis biomarker is not effective in diagnosis of sepsis. At-least two sepsis screen markers must be needed to achieve the accuracy of findings of blood culture. Recent meta-analysis suggested that procalcitonin should be used as an adjunct, rather than a replacement, to CRP to improve the diagnostic accuracy[10, 11].

In this study, we evaluated CRP, ESR, total white blood cell count, differential count, total nonsegmented neutrophil count, neuotrophil ratios, absolute neutrophil count as sepsis screen markers among 28 sepsis screen positive cases. Higher sigficance was found in CRP (92% cases). CRP is followed by I:T ratio (67.86%), total WBC count (46.43%), and ESR (17.86%). Total WBC >25,000/cmm was significant in 28.57% cases. Total WBC <5000/cmm was significant in 17.86% cases.

In this study,neonatal sepsis was frequently found in male neonate (52%) among blood culture positive cases. Here, mortality (11.76%) was associated with positive sepsis screen markers, gram negative bacteria, pre- term delivery, LBW and VLBW. This study shows increased risk of neonatal sepsis in premature newborns. Pre-term delivery (51.18%) is higher than term delivery (41.18%). This is similar to the observation made by Faridi et al where 53.97% pre -terms and 46.03% full terms neonates[12]. In this study, 17.65% of the newborns have premature rupture of membrane for >24 hours,A study Sonawane VB et al. reported that, 25% of the newborns have history PROM. After evaluation of this study, we found that prematurity and LBW (35.25%) are leading high risk factors for development of sepsisfollowed by VLBW (23.53%) and PROM.

Conclusion:

In our study, our final observation was that combined use of sepsis screen markers and blood culture are more effective in diagnosis of neonatal sepsis.

Use of single sepsis screen marker is not effective in the diagnosis of neonatal sepsis. So, at least 2 sepsis screen markers should be raised in diagnosis of neonatal sepsis.To exclude contamination of blood culture, sepsis screen markers should be evaluated. Mortality is associated with positive sepsis screen markers, gram negative bacteria, pre- term delivery, LBW and VLBW.

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