Evaluation of Risk Factors in Abnormal Uterine Bleeding and its Management in Tertiary Care Hospital

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INTRODUCTION
Abnormal Uterine Bleeding (AUB) is a term used to describe any type of bleeding that does not fall within the normal range for amount, frequency, duration and cycle. AUB is one of the most frequent presentations to gynecology OPD. AUB is a common but complicated clinical presentation and occurs in 15-20% of women between menarche to menopause and significantly affects the women's health. AUB pattern have been traditionally expressed in terms of menorrhagia, metrorrhagia polymenorrhea and oligomenorrhea. In order to create a universally accepted nomenclature to describe abnormal uterine bleeding, International Federation of Gynaecology, Obstetrics (FIGO) and ACOG introduced newer systems of terminology to describe AUB. It is known as PALM-COEIN classification, as to which physicians must be more cautious towards the patients visiting at Out-patient departments as it may lead to serious complications.

Etiology of AUB by FIGO and ACOG

PALM-Structural Causes
1. Polyp
2. Adenomyosis
3. Leiomyoma
4. Malignancy and hyperplasia
COEIN Non-Structural Causes

1. Coagulopathy
2. Ovulatory dysfunction
3. Endometrial
4. Iatrogenic
5. Not yet classified (Hiralal, 2014; Anupama-suresh et al., 2014).

Risk Factors of AUB

1. Ovulatory dysfunction (Hiralal, 2014).
2. Endometrial hyperplasia (Giannella et al., 2019).
3. Certain types of cancer i.e. Endometrial cancer, ovarian cancer (Giannella et al., 2019).
4. Use of intrauterine device (IUD) and birth control pills (Lethaby et al., 2019).
5. Adenomyosis (endometrium grows in the wall of the uterus) (Vannuccini and Petraglia, 2019; Pandey et al., 2013).
6. Drugs-anticoagulants (Godin et al., 2017), glucocorticoids (Luo et al., 2016).
7. Ceasarean section (Kinay et al., 2016).
8. Psychological stress (Hooja et al., 2016).
9. Obesity (Hooja et al., 2016).
10. Diabetes (Hooja et al., 2016).
11. High blood pressure (Hooja et al., 2016).
12. Polyps (common abnormal growths in the uterus or cervix) (Kanthi et al., 2016).
13. Age (Byna et al., 2015a; Pandey et al., 2013).
14. Hormonal imbalance (Byna et al., 2015b; Gowri et al., 2014); 15. Leiomyoma (Puri et al., 2014; Pandey et al., 2013; Rani and Thomas, 2013b).

Epidemiology

The prevalence internationally ranges between 3% and 30% during menarche and perimenopause. The prevalence increases to 35% or greater in regular and Intermenstrual bleeding (Davis and Sparzak, 2019).

Pathophysiology

The arteries present in the uterine and ovarian supply blood to the uterus. The arcuate arteries supply blood through radial branches to the functionalis and basalis layers which are the two layers of endometrium. During menstrual cycle the progesterone level decline which leads to breakdown of enzymes in the functionalis layer present in endometrium. Thus, the breakdown of enzyme leads to blood loss and sloughing causing menstruation. The blood loss is controlled by functioning platelets, thrombin and vasoconstriction of arteries in endometrium. Any kind of derangement in structure of uterus or clotting pathways or disruption of hypothalamic pituitary ovarian axis affects menstruation and leads to abnormal menstrual bleeding (Davis and Sparzak, 2019).

Evaluation

Laboratory testing can also be included but is not restricted. Diagnostic studies include ultrasound, MRI, hysteroscopy (Davis and Sparzak, 2019; Guin et al., 2011). MRI provides a detailed visualisation of internal organs of uterus that is convenient in surgical preparation, but is expensive and it isn’t the first line choice for imaging in patients. Ambulatory Hysteroscopy (Davis and Sparzak, 2019; Kolhe, 2018) and sonohysterography are also invasive and are obliging in circumstances where endometrial polyps are observed, pictures from transvaginal ultrasound are inconclusive, Submucosal leiomyomas are observed (Davis and Sparzak, 2019).

Differential Diagnosis

Any kind of bleeding from the internal organs or tract can result in misdiagnose as uterine bleeding. Therefore any bleeding from some other origin is considered into differential diagnosis and should be avert. Diagnosis for bleeding based on anatomic location:- Growth of benign in vulva region, Malignancy or benign growth, vaginal inflammations or infections in vagina, Growth of benign or infections in cervix region, Inflammatory diseases in fallopian tubes and ovaries, Infections or abnormal growth in urinary tract, Behcet syndrome or inflammation in gastrointestinal tract, Gestation complication including abortion spontaneously, Cause of bleeding that arises from uterine corpus in uterus are listed in PALM-COEIN (Davis and Sparzak, 2019).

Complications

Complications of chronic abnormal uterine bleeding include anaemia, infertility, and endometrial cancer. With acute abnormal uterine bleeding, severe anaemia, hypotension, shock, and even death may result if prompt treatment and supportive care are not initiated (Davis and Sparzak, 2019).

Adenomyosis: (AUB-A)

It is a uterine disorder in the form of benign in
endometrial glands and stroma is pathologically demonstrated in uterine myometrium. Adenomyosis can also find along with other gynaecological conditions, such as endometriosis and uterine fibroids. A long lasting treatment plan is required has a negative impact on quality of life takes place on the subject of fertility, menstrual symptoms and pregnancy consequence and a high chance of complications (Davis and Sparzak, 2019).

**Leiomyoma: (AUB-L)**

Leiomyoma of the uterus is one of the major causes of bleeding. Although many leiomyomas are asymptomatic, symptomatic leiomyomas require hysterectomy in perimenopausal women. It is diagnosed preoperatively by ultrasound examination and the diagnosis is confirmed by gross and microscopic examination of the surgically removed uterus (Kanthi et al., 2016). With regard to the location of fibroids, it was formerly considered that those women with SM fibroids, particularly with those distorting the cavity, were with heavy menstrual bleeding. Women with notable cavity distortion are represented with added remedial challenges (Kanthi et al., 2016).

**Malignancy: (AUB-M)**

Endometrial cancer has rarely reported in premenopausal women; with increasing obesity and prevalence of the metabolic syndrome, the endocrine-driven subset of endometrial malignancy has markedly elevated in frequency. The European age-standardised rates of uterine malignancy in UK have increased by 48%. It may be affected by deformation of the uterine cavity by fibroids, and as such, the co-existing pathology may retard diagnosis. If malignancies coexist with AUB classification, the pathophysiology should be described by making use of WHO/FIGO systems (Kanthi et al., 2016).

**Coagulopathy: (AUB-C)**

Coagulopathy affects 13% of the females presented with heavy menstrual bleeding. Majority of these female suffer from Von Willebrand disease. Systemic disorders of to stop bleeding can be found in 90% of females using a structured history. Anticoagulant and antiplatelet therapy has been considered as a part of ‘AUB-C’ (rather than AUB-L). Compression caused by a fibroid in uterus may result in venous thromboembolism (VTE). Bleeding previously considered as AUB-L may be exacerbated by anticoagulation (Kanthi et al., 2016).

**Ovulatory: (AUB-O)**

Ovulatory cycles may lead to bleeding by unchallenged oestrogen results on the endometrium giving rise to noticeable growth and condense resulting in heavy bleeding with an altered rate of occurrence in menstruation. It is observed mostly in the women of reproductive age; however, effect on the axis along with endocrinopathies is also present. The other factors include polycystic ovarian syndrome (PCOS), hypothyroidism as well as factors such as heaviness, starvation; reduce in size, tension and extreme exercise. The FIGO classification system is an active method with response and present debate informing future revisions. The location of drug remedies affecting with regards to whether anticoagulant/antiplatelet therapies and drugs affecting the axis may be better placed in AUB-I’ (Kanthi et al., 2016).

**Endometrial: (AUB-E)**

AUB that occurs in structurally usual uterus with uniform menstrual cycles without evidence of coagulopathy is likely to represent an underlying endometrial cause. Endometrial function of menstruation is still poorly understood, specifically the compound of the order of events activated by progesterone removal (due to death of the corpus luteum in the non-attendance of pregnancy). A crucial part in the sloughing and subsequent scar is played by Hypoxia, inflammation, haemostasis and angiogenesis to repair the functional higher layer of the endometrium (Kanthi et al., 2016).

**Iatrogenic: (AUB-I)**

The exogenous therapy that may contribute to unscheduled endometrial bleeding is related with regular oestrogen or progestin therapy or those that act on (systemic or intrauterine delivery routes) steroid release such as gonadotropin-releasing hormone (GnRH) agonists inhibitors. Selective oestrogen receptor modulators (SERMs) and increased selective progesterone receptor modulators (SPRMs) contribute to AUB through direct action on the endometrium rarely. The utilization of an intrauterine (IUD) may cause a low-grade endometritis which may also lead to AUB (Kanthi et al., 2016).

**Not Classified: (AUB-N)**

It is inexorable that pathologies that are poorly defined do not easily fit within the categories as described earlier. Examples include arteriovenous malformations, endometrial pseudoaneurysms, hypertrophy all can also be found along with AUB-L.

The usual analysis of the PALM-COEIN classification arrangement every 3–5 years through FIGO will allow reassessment, in particular. The other areas are considered for sub-classification include AUB-P and AUB-A (Kanthi et al., 2016).
Polyps: (AUB-P)

Endometrial polyp is a focal hyperplastic growth of glands and stroma and is a benign lesion commonly, which can rarely become malignant. Abnormal bleeding in uterus is frequently observed in the reproductive age group as well as post-menopausal age group. Sometimes patients will be entirely asymptomatic. With the emergence of high-resolution pelvic ultrasound and hysteroscopic diagnosis, it has become clear that AUB in women’s life is associated with endometrial polyp more often than suspected earlier (Puri et al., 2014).

METHODOLOGY

MATERIALS AND METHODS

The prospective observational study was conducted in In-patient and Out-patient departments of Obstetrics and Gynecology in a tertiary care teaching hospital for a duration of 6 months from September 2019 to February 2020. The patients included in the study criteria are those admitted in various units of Gynaecology departments with risk factors of AUB and also patients visiting Out-patient departments of Obstetrics & Gynaecology with the above mentioned risk factors. In this study patients from following criterion were excluded i.e., Emergency departments, absconded patients and patients with HIV and HBsAg. The data was collected from the case files of patients with risk factors of abnormal uterine bleeding, which consists of laboratory investigation, medication chart, and by interviewing the patients. In order to record the necessary data, a data collection form was designed based on the details needed for study and was validated by ethical committee ad health care professionals. It included- the Demographic details of patient, reason for admission along with risk factors mentioned separately. Social history and the past medical and medication history of the patient were noted. The various diagnostic tools used to confirm AUB and different management methods carried out to control bleeding during the course of stay in hospital. The study method was carried out as per the protocol approved by IEC. Based on the study criteria, procedures were explained and an informed consent form was obtained from patients. A validated structured documentation form was filled accordingly while interviewing patients of gynecology wards on a regular basis and by collecting data from their case files and updated up to discharge. The collected data was interpreted to generate result and result was analyzed and reported. The approval for the study was obtained from Institutional ethical committee (IEC), with ethical clearance from CMR College of Pharmacy, Hyderabad and thus the study was carried out.

RESULTS

A total of 306 cases were analyzed during the study period of 6 months out of that 88 cases had meaningful data for analysis. 88 patients had frequency of more than 1 risk factor to which the total count was N=109. According to Table 1, Figure 1 - the common risk factors observed in patients were AUB-Leiomyoma/fibroid (29%) in 32 patients. Patients included in unknown cause, are those which are included in not yet classified category according to PALM-COEIN with 19 patients (17%). As per Table 2, Figure 2, the major percentage of risk of AUB was observed in the age group 31-45 years (64%). As shown in Table 3, Figure 3 the most commonly used diagnostic method for screening was USG abdomen in 63 patients (58%) for confirmation of risk factors of AUB. The in-patients and out patients were administered with anti- fibrinolytics to control menstrual bleedings. Out of 88 patients, only 35 patients were administered with Anti-fibrinolytics which are shown Table 4, Figure 4. A combinational therapy of antifibrinolytics and hormonal therapy was administered to patients who had abnormal bleeding due to hormonal imbalance can be observed in Table 5, Figure 5. On the other hand, 2 patients had heavy menstrual bleeding and were controlled by hormonal therapy. Majority of patients in the present study have undergone surgical management- Hysterectomy i.e. removal of uterus in 46 patients (53%) which can be observed in Table 6, Figure 6. Drug induced abnormal uterine bleeding was not observed in any patients.

Figure 1: Distribution of patients according to risk factors

Statistical Analysis

In our study, one way analysis of variance (ANOVA) was used for data analysis of abnormal uterine bleeding in patients.

Tables 7 and 8 summarizes the risk factors of AUB showing the relation of age and risk factor.

Tables 9 and 10 summarizes the diagnostic method
Table 1: Risk factors of Abnormal uterine bleeding

| Risk factors           | No. of patients | Percentage of patients |
|------------------------|-----------------|------------------------|
| AUB-L                  | 32              | 29%                    |
| Unknown cause          | 19              | 17%                    |
| Hypertension           | 11              | 10%                    |
| Thyroid disorder       | 10              | 9%                     |
| Ectopic pregnancy      | 09              | 8%                     |
| C-section              | 08              | 7%                     |
| AUB-P                  | 06              | 5%                     |
| Incomplete abortion    | 05              | 5%                     |
| Endometrial hyperplasia| 03              | 3%                     |
| Psychological stress   | 02              | 2%                     |
| Surgery (laparotomy)   | 02              | 2%                     |
| Diabetes mellitus      | 01              | 1%                     |
| AUB-A                  | 01              | 1%                     |
| Total                  | N=109           |                        |

Table 2: Distribution of age as a risk factor

| Age group | No.of patients | Percentage of patients |
|-----------|----------------|------------------------|
| 16-30     | 19             | 21%                    |
| 31-45     | 56             | 64%                    |
| 46-60     | 13             | 15%                    |
| Total     | N=88           |                        |

Table 3: Diagnostic method for screening patients

| Diagnostic methods | No. of patients | Percentage of patients |
|--------------------|-----------------|------------------------|
| USG Abdomen        | 63              | 58%                    |
| USG Pelvis         | 26              | 24%                    |
| Histopathology     | 9               | 8%                     |
| Biopsy             | 5               | 5%                     |
| Pap smear           | 5               | 5%                     |
| Total              | N=108           |                        |

Table 4: Anti-fibrinolitics administered

| Anti-fibrinolitics | No.of patients | Percentage of patients |
|--------------------|----------------|------------------------|
| Trapic MF          | 16             | 45%                    |
| Tranexamic acid    | 19             | 45%                    |
| Total              | N=35           |                        |

where the relation of risk factor and diagnosis are analyzed.

Tables 11 and 12 summarizes the management of AUB where the relation of risk factor and types of management being carried out are analyzed.

Discussion

In our present research study, a total number of 306 patients were analysed and among them as per inclusion and exclusion criteria 88 patients were screened out and included in our study. ANOVA-ONE WAY was used for analysis of results. The present study, 64% women were in age group of 31-45 years which is corresponding to the study...
Table 5: Combinational therapy

| Combinational drugs                          | No.of patients | Percentage of patients |
|----------------------------------------------|----------------|------------------------|
| Trapic MF+ Tranexamic acid                   | 16             | 76%                    |
| Trapic MF+ Regesterone                       | 01             | 5%                     |
| Tranexamic acid+ Regesterone                 | 02             | 9%                     |
| Trapic MF+ Tranexamic acid+Regesterone       | 01             | 5%                     |
| Tranexamic acid+Regesterone+ Progestosterone | 01             | 5%                     |
| Total                                        | N=21           |                        |

Table 6: Management of AUB

| Surgeries performed                           | No. of patients | Percentage of patients |
|-----------------------------------------------|-----------------|------------------------|
| Total abdominal hysterectomy                  | 46              | 53%                    |
| Dilation & Curettage (D & C)                  | 12              | 14%                    |
| Salpingectomy                                 | 06              | 7%                     |
| Salpingo-oophorectomy                         | 05              | 6%                     |
| Laparotomy                                    | 04              | 5%                     |
| Polypectomy                                   | 03              | 3%                     |
| Dilation & Curettage-Polypectomy              | 03              | 3%                     |
| Laparoscopically Assisted Vaginal Hysterectomy| 03              | 3%                     |
| Myomectomy                                    | 02              | 2%                     |
| Intra Uterine Device (IUD)                    | 01              | 1%                     |
| Laparotomy-Salpingectomy                      | 01              | 1%                     |
| Total                                         | N=86            |                        |

Figure 2: Distribution of age group as a risk factor

done by Byna et al. (2015a). 21% women were in age group of 16-30 and 15% women were in age group of 46-60 which was correlating to the study done by Sinha et al. (2018) concluding that the incidence and a pattern of AUB varies according to age groups. Present study indicates the most common risk factors occurring in women of age group 31-45 was Leiomyoma (29%) which was a greater risk factor for AUB and is close to the study conducted by Rani and Thomas (2013a) and Kinay et al. (2016), also correlated with a history of C-section (07%) as an independent risk factor for AUB. Thyroid (09%) was indicated as a risk factor of AUB in patients which was similar to the study conducted by Byna et al. (2015b) and Gowri et al. (2014). It was then followed by Hypertension (10%), ectopic pregnancy (08%) in parallel to the major risk factor. In our study, most common diagnostic methods carried out for screening and identification of
Table 7: Summary of risk factors of AUB: Relation of age-risk factor

| Risk factors                          | Groups | Count | Sum  | Average | Variance |
|---------------------------------------|--------|-------|------|---------|----------|
| Adenomyosis                           | 4      | 1     | 2    | 2       | #DIV/0!  |
| Leiomyoma                             | 5      | 25    | 52   | 2.08    | 0.2433333333 |
| Polyp                                 | 6      | 5     | 11   | 2.2     | 0.2      |
| Endometrial hyperplasia               | 7      | 2     | 5    | 2.5     | 0.5      |
| Hypertension                          | 8      | 3     | 7    | 2.3333333333 | 0.3333333333 |
| Thyroid                               | 10     | 3     | 7    | 2.3333333333 | 0.3333333333 |
| C-section                             | 11     | 3     | 5    | 1.6666666667 | 0.3333333333 |
| Ectopic pregnancy                     | 13     | 9     | 12   | 1.3333333333 | 0.25     |
| Incomplete abortion                   | 14     | 4     | 5    | 1.25    | 0.25     |
| Unknown cause                         | 16     | 19    | 36   | 1.894736842 | 0.432748538 |
| Leiomyoma+HTN+ thyroid                | 37     | 3     | 6    | 2       | 1        |
| HTN+ thyroid                          | 38     | 2     | 5    | 2.5     | 0.5      |
| Leiomyoma+ thyroid                    | 39     | 1     | 2    | 2       | #DIV/0!  |
| Leiomyoma+ incomplete abortion        | 40     | 1     | 1    | 1       | #DIV/0!  |
| Leiomyoma+C-section                   | 41     | 1     | 2    | 2       | #DIV/0!  |
| HTN+C-section                         | 42     | 1     | 3    | 3       | #DIV/0!  |
| Polyp+HTN+C-section                   | 43     | 1     | 1    | 1       | #DIV/0!  |
| Thyroid+C-section                     | 44     | 1     | 2    | 2       | #DIV/0!  |
| Endometrial hyperplasia+C-section     | 45     | 1     | 2    | 2       | #DIV/0!  |
| Leiomyoma+HTN+DM                      | 46     | 1     | 3    | 3       | #DIV/0!  |

Table 8: ANOVA of risk factors of AUB: Relation of age-risk factor

| Source of Variation | SS       | Df | MS        | F         | P-value     | F crit   |
|---------------------|----------|----|-----------|-----------|-------------|----------|
| Between Groups      | 12.53316999 | 19 | 0.659640526 | 1.992649414 | 0.02053823017 | 1.743892332 |
| Within Groups       | 22.17947368 | 67 | 0.3310369207 |           |             |          |
| Total               | 34.71264368 | 86 |           |           |             |          |

Inference: F > F crit implies that the average age of people influenced by each of the risk factors is not similar. Risk factor 5 (Leiomyoma) seems to be majorly affecting the people of the age group 2 (31-45).

Table 9: Summary of diagnostic method statistical analysis: Relation of risk factor-diagnosis

| Diagnostic methods                          | Groups | Count | Sum  | Average | Variance |
|---------------------------------------------|--------|-------|------|---------|----------|
| USG Abdomen                                 | 0      | 4     | 42   | 10.5    | 40.33333333 |
| USG Pelvis                                  | 17     | 43    | 704  | 16.37209302 | 185.7630122 |
| Papsmear                                    | 18     | 17    | 258  | 15.17647059 | 94.02941176 |
| USG Abdomen+ USG Pelvis                    | 20     | 2     | 18   | 9       | 2        |
| USG Abdomen + Pap smear                     | 47     | 5     | 49   | 9.8     | 23.7     |
| USG Abdomen + Histopathology               | 48     | 2     | 13   | 6.5     | 4.5      |
| USG Abdomen + Biopsy                       | 49     | 6     | 74   | 12.33333333 | 216.6666667 |
| USG Abdomen + USG Pelvis + Histopathology  | 50     | 4     | 67   | 16.75   | 242.9166667 |
| USG Abdomen+ USG Pelvis + Pap smear + Histopathology | 51     | 2     | 18   | 9       | 2        |
| USG Abdomen+ USG Pelvis + Pap smear + Histopathology | 52     | 1     | 5    | 5       | #DIV/0!  |
| USG Pelvis+ Biopsy                         | 53     | 1     | 16   | 16      | #DIV/0!  |
Table 10: ANOVA of diagnostic method statistical analysis: Relation of risk factor-diagnosis

| Source of Variation | SS          | Df | MS        | F            | P-value | F crit          |
|---------------------|-------------|----|-----------|--------------|---------|----------------|
| Between Groups      | 722.7777277 | 10 | 72.27777277 | 0.4842774353 | 0.8953159282 | 1.957711492 |
| Within Groups       | 11342.90043 | 76 | 149.2486899 |             |         |                |
| Total               | 12065.67816 | 86 |           |              |         |                |

Inference: F < F crit implies that the diagnostic methods do not depend on risk factor

Table 11: Summary of management done for AUB: Relation of risk factor-management

| Management                        | Groups | Count | Sum | Average | Variance |
|-----------------------------------|--------|-------|-----|---------|----------|
| Total abdominal hysterectomy      | 22     | 29    | 59  | 2.034482759 | 0.3916256158 |
| Laparoscopic assisted vaginal hysterectomy | 23     | 3     | 9   | 3        | 0        |
| Salpingectomy                     | 25     | 1     | 1   | 1        | #DIV/0! |
| Polypectomy                       | 26     | 2     | 4   | 2        | 0        |
| Dilation & curettage              | 28     | 15    | 27  | 1.8      | 0.4571428571 |
| Intrauterine device               | 29     | 1     | 2   | 2        | #DIV/0! |
| Myomectomy                        | 30     | 2     | 4   | 2        | 0        |
| Laparotomy                        | 31     | 2     | 3   | 1.5      | 0.5      |
| Laparotomy + salpingectomy        | 32     | 2     | 3   | 1.5      | 0.5      |
| TAH + D&C                         | 54     | 5     | 12  | 2.4      | 0.3      |
| TAH + LAVH                        | 55     | 1     | 2   | 2        | #DIV/0! |
| TAH + salpingo- oophorectomy      | 56     | 1     | 2   | 2        | #DIV/0! |
| TAH + salpingectomy               | 57     | 2     | 4   | 2        | 0        |
| Salpingectomy + myomectomy        | 58     | 2     | 4   | 2        | 0        |
| IUD + myomectomy                  | 60     | 1     | 1   | 1        | #DIV/0! |
| LAVH + D & C                      | 61     | 1     | 2   | 2        | #DIV/0! |
| LAVH + D & C polypectomy          | 62     | 1     | 3   | 3        | #DIV/0! |

Table 12: ANOVA of management done for AUB: Relation of risk factor-management

| Source of Variation | SS            | Df | MS       | F            | P-value | F crit          |
|---------------------|---------------|----|----------|--------------|---------|----------------|
| Between Groups      | 3181.913075  | 17 | 187.1715373 | 1.453755646 | 0.1393198786 | 1.772930839 |
| Within Groups       | 8883.765086  | 69 | 128.7502186 |             |         |                |
| Total               | 12065.67816  | 86 |           |              |         |                |

Inference: F < F crit implies that there is an insignificant amount of difference in the average age of patients under various managements. F < F crit implies that the difference in the mean of the risk factors groups based on management is insignificant.

risk factors in AUB were USG Abdomen (58%) and USG Pelvis (24%). Our study is in contradiction to the study conducted by Guin et al. (2011) stating that hysteroscopy when combined with biopsy and USG-pelvis will reduce burden of hysterectomy. In our study, USG- Abdomen diagnostic method was found to be economically eased for all patients. Initial medical management for most patients included steroid hormones to manage the hormonal imbalance in patients, tranexamic acid and/or combination drug i.e. Tracic MF (mefenamic acid) was used to control heavy menstrual bleeding. Surgical treatment was carried on clinical stability of patient and majority of them underwent Total abdominal hysterectomy (53%) as management procedure and was supported by study done by Rani and Thomas (2013a) stating that patients with leiomyoma underwent hysterectomy along with patients existing with other independent risk factors of adenomyosis and polyp. It was followed by Dilation and curettage (14%) in high number.
Table 13: Summary of drug used to control heavy menstrual bleeding: Relation of age-drug

| Drugs administered                  | Groups | Count | Sum  | Average | Variance    |
|-------------------------------------|--------|-------|------|---------|-------------|
| Tropic – MF                          | 0      | 39    | 75   | 1.923   | 0.3886639676|
| Tranexamic acid                      | 33     | 16    | 31   | 1.9375  | 0.4625      |
| Tropic MF+ Tranexamic acid           | 63     | 8     | 18   | 2.25    | 0.5         |
| Tropic MF+ regesterone               | 64     | 1     | 2    | 2       | #DIV/0!     |
| Tranexamic acid + Regesterone        | 65     | 2     | 3    | 1.5     | 0.5         |
| Tropic MF+ Tranexamic acid + Regesterone | 66 | 1   | 1    | 1       | #DIV/0!     |
| Tranexamic acid + Regesterone + Progesterone | 67 | 1 | 16  | 16      | #DIV/0!     |

Table 14: ANOVA of drug used to control heavy menstrual bleeding: Relation of age-drug

| Source of Variation                  | SS         | Df | MS       | F           | P-value      | F crit   |
|--------------------------------------|------------|----|----------|-------------|--------------|----------|
| Between Groups                       | 2.107222719| 6  | 0.3512037865 | 0.8750539227 | 0.5171550466 | 2.215694079 |
| Within Groups                        | 31.70673077| 79 | 0.4013510224 |             |              |          |
| Total                                | 33.81395349 | 85 |          |             |              |          |

Inference: F < F crit implies that the differences in the average ages of people taking various drugs is insignificant. F < F crit implies that drugs administered to a person do not depend on her age.

CONCLUSION

We conclude that the high risk factor observed in patients were Leiomyoma with other risk factors i.e. ectopic pregnancy, thyroid, hypertension, incomplete abortion and a history of C-section. In the present study, the most common diagnostic method used for screening of patients was USG-Abdomen which was economically affordable. We would like to conclude that Total Abdominal Hysterectomy was primary surgical management for AUB. There were no cases reported with drug induced abnormal uterine bleeding (glucocorticoids & anticoagulants). The study states that abnormal uterine bleeding occurring without any known risk factor can be included into the category of NOT YET CLAS-
SIFIED according to PALM-COEIN classification, as to which physicians must be more cautious towards the patients visiting at Out-patient departments.

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Authors Contribution Statement

Neelam Injeti conceived the idea and guided throughout the study and also reviewed the manuscript. Anusha Karipali, Begari Manisha, Cherukuri Anusha, Hina Sultana collected the case, evaluated the result and drafted the manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest for this study.

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