Gynaecological Emergencies in the Tropics: Recent Advances in Management

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Keywords: *Gynaecological emergencies, ectopic pregnancy, unsafe abortion, pelvic infection, adnexal mass*

INTRODUCTION

Gynaecological disorders are a common cause of morbidity among women of reproductive age worldwide. In developing countries, gynaecological emergencies present enormous challenges given the weak health infrastructure in these settings. Whereas reports indicate that approximately 1.4 million gynaecological emergency visits to emergency department are recorded in the USA accounting for 24.3 visits per 1000 women of reproductive age (15 - 44 years)[1], equivalent data for developing countries are not readily available. However acute gynaecological conditions are important causes of morbidity and mortality in these countries and constitute significant public health problems.

This review will highlight common gynaecological emergencies in the tropics and discuss current evidence-based approaches to their management.

The most common gynaecological emergencies are ectopic pregnancy, acute pelvic inflammatory disease, miscarriages and complicated ovarian cysts [2]. Other gynaecological conditions which may present as emergencies are menstrual disorders, bleeding gynaecological malignancies, coital laceration and sexual assault. In the tropics, ectopic pregnancy and complications of unsafe abortion are the most common life threatening gynaecological emergencies.

In developing countries, ectopic pregnancy is the most common surgical gynaecological emergency[3] while in the USA, acute pelvic inflammatory disease is the most common gynaecological emergency[1]. Gynaecological emergencies can be classified into two broad categories based on whether they are pregnancy related or non-pregnancy related[4]. Pregnancy related gynaecological emergencies are mainly complications of early pregnancy namely ectopic pregnancy, miscarriage and complications of unsafe abortion. Non-pregnancy related gynaecological emergencies include acute pelvic inflammatory disease, menstrual disorders, bleeding from gynaecological malignancies, coital laceration and sexual assault.

Common gynaecological emergencies typically present as an acute abdomen, abnormal vaginal bleeding or a combination of both [2].

Recent advances in sonography, biochemical pregnancy testing, minimal access surgery and newer antibiotics have led to early diagnosis[2] and expanded the frontiers of more conservative treatment options.

Pregnancy Related Conditions

Ectopic Pregnancy

Ectopic pregnancy may present with a wide clinical spectrum ranging from a total lack of symptoms and signs to a shocked and moribund condition resulting from major intra-peritoneal haemorrhage [4]. The most common symptoms are unilateral lower abdominal pain, a short period of amenorrhoea, and slight vaginal bleeding. There may be general physical signs of haemodynamic instability, lower abdominal tenderness, and guarding. Vaginal examination may reveal exquisite tenderness. Anaemia may also be evident. The serum b-hCG is more reliable being positive in virtually all cases of ectopic pregnancies even before missed period [5].

Early diagnosis is crucial because it facilitates appropriate management options of medical or conservative surgical procedures such as salpingostomy or segmental resection of the affected part of the tube.

Surgical Management of Ectopic Pregnancy

In the shocked patient with intraperitoneal bleeding, which is the typical presentation in the tropics, laparotomy should be undertaken. In subacute presentation of unruptured ectopic pregnancies, transvaginal ultrasound alone or combined with a discriminatory zone serum b-hCG titre are useful diagnostic aids. Serial serum hCG titre and direct visualization at laparoscopy are also useful. Identification of empty uterus with an adnexal mass that is not of ovarian origin (e.g. tubal ring or bagel sign) and free fluid in the pelvis is 85-95% predictive of ectopic pregnancy [6].

The discriminatory zone of hCG is the minimal hCG titre above which an intrauterine gestational sac is expected to be visualised by pelvic ultrasound. An ectopic pregnancy can be diagnosed when an intrauterine gestational sac is absent but serum hCG titre is above the discriminatory zone. Transvaginal ultrasound with higher resolution than transabdominal ultrasound detects intrauterine gestation 1 week earlier or when the serum hCG is greater than or equal to 1000-1,500 i.u/L[6]. Absence of an intrauterine gestational sac with transvaginal scan when the serum hCG titre is above this discriminatory zone is highly predictive of ectopic pregnancy with 90-95% sensitivity and 95% specificity [2, 6].

The serum hCG titre doubles every 2-3 days in normal pregnancy. In abnormal pregnancies including ectopics however, the doubling rate is impaired with < 66% increase in 48 hours. However 15% of normal pregnancies may not follow the usual pattern[6]. Combining empty uterus, discriminatory zone principles and serial hCG titre, the diagnosis of ectopic pregnancy can be made with high accuracy[8] (sensitivity and specificity of 95-99% and 98% respectively).

Unless in shocked or haemodynamically compromised patient, and in situations where surgical skill is not available, current surgical management of ectopic pregnancy involves laparoscopic salpingotomy or salpingostomy. Randomized trials have shown that in the haemodynamically stable patient, laparoscopic conservative surgery was associated with shorter

duration of surgery and recovery time, less blood loss, lower analgesic requirement and reduced overall cost [6, 8, 9]. Although the number of patients studied was small, subsequent ectopic pregnancy rate and surgical adhesion formation were lower while tubal patency and subsequent intra-uterine pregnancy rate were higher with the laparoscopic route. Conservative laparoscopic surgery was however associated with relatively higher rate of persistent trophoblasts.

Compared with salpingectomy, salpingostomy is associated with higher recurrent ectopic pregnancy rare (14% vs 10%) and persistent trophoblast. However, subsequent intrauterine pregnancy rates are similar [6] [53% (salpingostomy) vs 49.3% (salpingectomy)]. The Royal College of Obstetricians and Gynaecologists (RCOG) recommends salpingectomy when the contralateral tube is healthy. When the contralateral tube is severely diseased or absent, the recommended treatment is salpingotomy [10]. These recommendations lack a strong evidence base however as they are based on observational studies.

Medical Management of Ectopic Pregnancy
Different protocols involving methotrexate, potassium chloride, hyperosmolar glucose, dactinomycin, prostanglandins and mifepristone had been developed for the medical management of ectopic pregnancy [11]. Methotrexate, a folinic acid antagonist which inhibits DNA synthesis has however become established as the most widely used medical agent in the treatment of ectopic pregnancy; protocols involving other drugs are largely experimental There is controversy over the mode of delivery (local or systemic), selection criteria, dosing regimen and actual dose of methotrexate required for medical treatment. The American College of Obstetricians and Gynaecologists (ACOG) [12] recommended selection criteria for methotrexate treatment is shown on Table 1.

Table 1: ACOG recommended criteria for methotrexate treatment

Absolute indications
Haemodynamically stable, no active bleeding, no haemoperitoneum
Non-laparoscopic diagnosis
Patient desires future fertility
General anaesthesia poses significant risk
Patient is able to return for follow-up care
Patient has no contra-indication to methotrexate

Relative indications
Unruptured mass < 3.5 cm in size on scan
No fetal cardiac activity
hCG does not exceed a pre-determined value (6,000 – 15,000 IU/L)

It is commonly given either as a single dose or variable (multiple)-dose regimen. Variable dose methotrexate is administered as 1 mg/kg, IM on alternate days (days 1, 3, 5, 7) with folinic acid rescue on intervening days (days 2, 4, 6, 8). Single dose methotrexate is given as 50 mg/m² body surface area, IM. Repeat hCG titre is performed on days 4 and 7. If the hCG decline is < 15% between days 4 and 7 a second dose of methotrexate is administered and the protocol is restarted at a new day 1 [11]. Serial full blood count, liver and renal function tests are essential prior to and following methtrexate administration. Serial hCG monitoring is usually commenced 4 days after initiation of treatment: if the hCG level declines > 15%, hCG titres are monitored weekly.

Signs of treatment failure include worsening abdominal pain, haemodynamic instability, levels of hCG that do not decline by at least 15% between day 4 and day 7 post-treatment and increasing or plateauing hCG levels after the first week of treatment[5]. Although the single dose methotrexate protocol is so described, about 20% of patients may receive more than one treatment cycle [13]. Pelvic examination and sexual activity should be avoided during treatment to prevent rupture of the tubal mass.

A recent meta-analysis showed that multiple dose regimen compared with single dose regimen was more effective (92.7% vs 88.1); however, the side effects were lower with single dose therapy [14].

Serum b-hCG level may be the most important factor for predicting failure of medical therapy (97% success rate if b-hCG < 2000IU/L, 74% success if > 2000IU/L) [15]. Other risk factors for failure are the visualisation of yolk sac and fetal cardiac activity [16]. Overall, if the strict criteria are adhered to, medical management appears attractive, but cost and the need for prolonged follow-up should be considered.

Complications of Unsafe Abortion
Unsafe abortion remains a significant public health issue. Complications of unsafe abortion constitute one of the leading causes of maternal mortality in developing countries [17, 18, 19]. Worldwide, almost 70,000 women die as a result of complications from unsafe induced abortions every year, accounting for 13% of all maternal deaths [20], which is equivalent to a case-fatality rate of 367 deaths per 100,000 unsafe abortions [21]. Lamina and Odusoga [22] reported a case fatality of 30.4% among hospitalized women in Nigeria.

Morbidity is more commonly associated with unsafe abortion than mortality although they share similar causes namely haemorrhage, sepsis, peritonitis and trauma to the genital tract and abdominal organs. Complications from unsafe abortion are believed to account for the largest proportion of admissions for gynaecological care in developing countries. Combining data on abortion-related hospital admissions among women aged 15 - 44 years from 13 developing countries in Africa, Asia, Latin America and the Caribbean, Singh [23] estimated an average of 5.7 per 1,000 women per year. Gynaecological emergencies were the commonest indications for gynaecological admission and were responsible for all deaths during a five-year period in a tertiary health facility in Nigeria [22].

Nearly 90% of unsafe abortions take place in the developing world [19]. In recognition of the public health impact of complications of abortion, the post

abortion consortium (comprising of major international agencies) emerged in the mid-1990s with the objective of promoting post-abortion care. Post-abortion care has three elements [24].

- Emergency treatment services for complications of spontaneous and induced abortion;
- Post-abortion family planning services including counselling and contraceptive method delivery);
- Links between emergency abortion treatment services and comprehensive reproductive health care.

The components of post-abortion care have recently been modified and now include the following five parts namely community and service provider partnerships, counselling, treatment of incomplete/unsafe abortion and their potentially life-threatening complications, family planning and contraceptive services, reproductive and other health services [25, 26].

Strategies for preventing unsafe abortion are traditionally discussed in three levels viz primary, secondary and tertiary. Primary prevention seeks to reduce the need for unsafe abortion through increasing access to safe, effective contraception, legalization of abortion on request, use of safer techniques and improvement of provider skills [21]. Secondary prevention addresses prompt and appropriate treatment of complications of unsafe abortion including early evacuation of the uterus, treatment of severe complications such as bowel injury, severe sepsis, renal failure, tetanus, and gas gangrene) as well as treatment of coagulopathy.

The WHO [21] has produced a guideline for the management of complications of abortion. Manual vacuum aspiration is recommended as the safest technique for uterine evacuation when the uterine size is < 12 weeks [27, 28]. The method is easier to use, safer, and faster [29]. It is also easy to employ as an out-patient procedure and can be effectively used by midwives [30].

Misoprostol, a prostaglandin E_1 analogue is emerging as a cheap alternative in the management of incomplete abortion [31]. Clinical trials comparing misoprostol with surgical evacuation employing doses from 400 mcg to 800 mcg in the management of incomplete abortion have reported success rates ranging from 84% to 95% [32, 33, 34]. Tertiary prevention of unsafe abortion aims at reducing long-term complications. Prompt surgery (repair of uterine perforation, hysterectomy, repair of bladder and bowel fistula) may prevent death, future suffering and stigmatization [21, 35].

In the presence of sepsis, early commencement of antibiotic therapy is crucial. In resource constrained settings, antibiotic choice may be limited. A traditional approach involves augmentin combined with gentamycin and metronidazole [35]. Where affordable, an alternative regimen is to combine a third generation cephalosporin with gentamycin and metronidazole. Resuscitation, early recognition and treatment of complications and referral to higher levels of care are pivotal elements in the post-abortion care approach.

Miscarriages

While most of these women are haemodynamically stable, occasionally, a patient may be in shock and bleeding very heavily. In this situation vaginal examination is imperative as the clinical situation may have resulted from vagal response to products of conception being caught up in the cervical os and their removal may rapidly improve the patient's condition [4].

In addition to supportive therapy such as correction of blood loss, analgesia, antibiotic therapy, uterine evacuation is usually needed in first trimester incomplete miscarriage. Methods of uterine evacuation are as discussed above. For women who are rhesus negative, anti-D immunoglobulin (50-100ug) should be given.

Studies on expectant management of miscarriages have shown wide variation in success rates. At present the role of expectant management of miscarriage needs further evaluation.

Non – Pregnancy Related Conditions
Acute Pelvic Inflammatory Disease (PID)
Acute PID is the most common gynaecological emergency not associated with pregnancy [7]. It is the most common infectious disease affecting young women (15 – 25 years) and accounts for 94% of the morbidity associated with STD in developed countries [2]. Although, it does not usually constitute a life threatening emergency, urgent therapy in required to minimize the effect of the disease on subsequent fertility and reduce the risk of subsequent sequelae such as ectopic pregnancy and chronic pelvic pain. Important risk factors are young age, sexually transmitted infections, pelvic instrumentation (including termination of pregnancy and IUD insertion), and multiple sexual partners [36].

Diagnosis

Diagnosis of PID may be difficult because signs and symptoms vary and often overlap with other clinical conditions. Laparoscopy has been accepted as the gold standard for diagnosis. When compared with strict criteria for laparoscopic diagnosis, only 66% of women diagnosed clinically to have PID were found to have been correctly diagnosed [37, 38]. However, due to cost, limited access, especially in developing countries and risk associated with surgery, universal use of laparoscopy for diagnosis of PID cannot be advocated.

However, Centres for Disease Control (CDC)[39] has adopted criteria for diagnosis of PID (Table 2) for which empirical treatment can be instituted, if these minimum criteria are present.

Table 2: Centers for Disease Control criteria for diagnosis of pelvic inflammatory disease

Minimum criteria
Lower abdominal tenderness
Bilateral adnexal tenderness and
Cervical motion tenderness
Additional criteria that support the diagnosis
Temperature > 38.3°C
Abnormal cervical or vaginal discharge
Elevated erythrocyte sedimentation rate
Elevated C-reactive protein
Documented cervical infection with N. gonorrhoeae or C. trachomatis
Definitive criteria – indicated in selected cases
Laparoscopic findings suggestive of PID
Histopathological evidence of endometritis on endometrial biopsy. Imaging technique showing thickened fluid-filled tubes with or without free pelvic fluid or tubo-ovarian complex

Table 3: Evidence-based antibiotic regimens for the treatment of PID (European guideline)

Outpatient regimens
Oral ofloxacin 400 mg twice daily plus metronidazole 500 mg twice daily for 14 days
Intramuscular (IM) ceftriaxone 250 mg single dose or IM cefoxitin 2 g single dose with oral probenecid 1 g, followed by oral doxycycline 100 mg twice daily plus metronidazole 400 mg twice daily for 14 days
Inpatient regimens
Cefoxitin IV 2 g 6 hourly plus doxycycline 100 mg orally 12 hourly, followed by oral doxycycline 100 mg twice daily plus metronidazole 400 mg twice daily for a total of 14 days
Clindamycin IV 900 mg plus gentamycin (2 mg/kg loading dose followed by 1.5 mg/kg 8 hourly or as an equivalent single daily dose), followed by either oral clindamycin 450 mg orally four times daily or oral doxycycline 100 mg twice daily plus oral metronidazole 400 mg twice daily to complete 14 days treatment

When used for diagnosis, CDC criteria have been reported to have sensitivity of 83%[2] and may miss more than 15% of true cases of upper genital tract infection [36].

Other diagnostic procedures include imaging techniques such as ultrasound, computerised tomography and magnetic resonance imaging, culdocentesis and endometrial biopsy. Compared with laparoscopy, abdominal and transvaginal ultrasound have been shown to have 78% and 80% sensitivity respectively in diagnosing PID and excluding other differential diagnoses such as ectopic pregnancy, tubo-ovarian abscess, ovarian cyst and ovarian torsion [40]. MRI has a sensitivity and specificity of 95% and 93% respectively, but is expensive and cannot likely enjoy widespread acceptance particularly in developing countries.

Treatment
Since there are no reliable clinical diagnostic criteria, empirical treatment is recommended. This includes appropriate antibiotic therapy, analgesics and intravenous fluids. If there are signs of generalised peritonitis suggestive of burst abscess, laparotomy with drainage of the abscess is necessary [4]. Laparotomy should also be performed if the woman remains unwell and abscess is not becoming smaller after 48 hours of supportive therapy. Choice of antibiotics should cover N. gonorrhoeae, C. trachomatis, facultative aerobes and anaerobes particularly those associated with bacterial vaginosis [36]; combination of antibiotics is recommended because PID is polymicrobial in aetiology [41]. The European evidence-based antibiotic guideline is shown in Table 2. However, local sensitivity patterns should guide the choice of antibiotics.

The goals of treatment are to relief the acute symptoms and prevent long term sequelae of PID. It is conventional to start treatment with parenteral therapy followed by oral therapy after clinical improvement and to continue treatment for 14 days though there is no evidence on the optimal duration of treatment or route of administration. Contact tracing is essential and sexual contacts should be treated. Sexual abstinence is also advised until cure is achieved.

It is conventional to remove any intrauterine contraceptive device if present when diagnosis of PID is made. Randomised control trials and observational studies have shown that removing an IUCD does not alter response to treatment [42]. However, IUD removal is recommended in severe illness that warrants hospitalization.

Recent studies indicate that oral out-patient treatment is as effective as in-patient parenteral treatment for mild - moderate cases of PID. However the following criteria have been established by CDC for hospitalization based on observational data and consensus opinion [39, 43]: when surgical emergencies (e.g appendicitis) cannot be excluded; pregnancy; patient does not respond clinically to oral antimicrobial therapy; vomiting or intolerance of oral antibiotics; presence of tubo-ovarian abscess; imunodeficiency states including HIV infection; and adolescent under the age of 18 years.

Prompt and adequate treatment will reduce long term complications of PID such as ectopic pregnancy, chronic pelvic pain and tubal factor infertility.

PID is preventable; and cost effective strategies for prevention of PID in developing countries appear feasible. Primary prevention includes public enlightenment campaigns about sexually transmitted infections, promotion of safer sex practices including use of barrier methods, delaying the onset of sexual activity and antibiotic prophylaxis for women undergoing vaginal operations. Early diagnosis and adequate treatment of lower genital infections and

upper genital tract infections to prevent long-term complications are the secondary and tertiary preventive approaches respectively.

Adnexal Masses

Adnexal masses (complicated ovarian cysts and tubo-ovarian abscess) are common gynaecological emergencies that typically present with lower abdominal pain. Most ovarian cysts that undergo complications are functional cysts particularly in younger women. However, ovarian cysts may be malignant especially in older women.

Complications of ovarian cysts include haemorrhage, rupture, torsion and infection. Acute or sub acute symptoms may result from these complications. All could present with abdominal pain or referred pain along the cutaneous distribution of obturator nerve, i.e. the inner side of the thigh down to the knee.

Tubo-ovarian Abscess

A patient with tubo-ovarian abscess will likely have an associated PID. Ultrasound is central to the diagnosis and management of tubo-ovarian abscess. Ultrasound is unable to clearly define the borders of the ovaries and fallopian tubes; these structures are thus described as the tubo-ovarian complex. Analgesia, intravenous fluids and antibiotics are required.

Prompt surgical intervention should be employed in patients with ruptured tubo-ovarian abscess with generalized peritonitis and septic shock [4]. Ultrasound-guided drainage, colpotomy, percutaneous drainage, ultrasound-guided transvaginal aspiration have been described, but the results are inconsistent [2].

Torsion of Ovarian Cyst

This is unusual with adnexal masses less than 5cm in diameter [44]. Most cases occur in women of reproductive age. Approximately 50% of torsions demonstrate an ovarian mass at time of surgery and mature cystic teratomas are the most common tumours leading to torsion (3.5-10% of them undergo torsion) followed by cystadenomas [45]. Approximately 2% of torsion involves ovarian malignancy [45]. Ovarian torsion may also occur in association with ovarian hyper-stimulation syndrome (OHSS) where saving and conserving the ovaries is crucial. Ovarian torsion occurs twice as common on the right probably due to the presence of sigmoid colon on the left [45].

Patients with ovarian torsion classically present with acute or sub-acute abdominal pain, nausea and vomiting and mild shock. There may be lower abdominal tenderness, rigidity and tenderness. Pelvic examination will reveal tender adnexal mass. There is leucocytosis and low grade fever.

Ovarian torsion may also present with episodes of recurrent pain over a long period as the pedicle twists and untwists. Finally the pain becomes continuous as the ovarian blood supply is cut off and the ovary becomes gangrenous. Misdiagnosis is common and by the time patient comes to surgery, ovarian infarction has already occurred.

Rupture of Ovarian Cyst

Ovarian cyst may rupture spontaneously or traumatically and signs and symptoms will depend on the amount and character of the cyst content. Rupture of small cyst may be silent but large cyst rupture may cause peritonitis and shock. The contents of endometriotic and dermoid cysts are extremely irritant and hence cause severe symptoms such as abdominal pain, collapse and signs of acute abdomen. However content of serous cyst are significantly less irritant. Rupture of mucinous cystadenoma leads to dissemination of cells causing development of pseudomyxoma peritonei.

Haemorrhage

Small haemorrhages are common in normally functioning ovaries. Slight bleeding also occurs regularly in the vascularization phase of corpus luteum but if excessive, may lead to formation of corpus luteum cyst.

Haemorrhage can occur from the torn edge of a ruptured cyst or into the cavity of a cyst. Intra-peritoneal bleeding involving ruptured corpus luteum cyst usually mimics ectopic pregnancy. The rupture often occurs on day 20-26 and two-third of cases occurs on the right [45]. Symptoms and signs include severe lower abdominal pain and tenderness. Patient may be anaemic and negative pregnancy test will differentiate it from ectopic.

Infection of Ovarian Cyst

Infected cysts causing abscess formation are usually a feature of acute pelvic inflammatory disease [4]. One percent of ovarian dermoid cyst becomes infected. Endometriotic cyst is particularly prone to secondary suppurative inflammation. Most offending organism implicated in infected ovarian mucinous cystadenoma, dermoid cyst and endometriotic cyst is salmonella typhi [46, 47]. In addition to signs of acute abdomen, constitutional symptoms such as fever and tachycardia may be present. Rupture of the infected cyst leads to pelvic or generalized peritonitis. Accurate diagnosis may be difficult but a triad of ovarian cyst, signs of infection without any other source of infection and immunosuppression should heighten the suspicion of infected ovarian cyst [4].

Diagnosis of Complications of Ovarian Cysts

Diagnosis is based on clinical symptoms and signs as described above. Differential diagnoses of adnexal accident include ectopic pregnancy, appendicitis, appendix abscess, acute PID, diverticulitis, urinary tract infection and ureteric colic. Detailed history of presenting complaint, full gynaecological history, thorough physical examination and in some instances, ancillary investigations will assist in making accurate diagnosis.

The investigations required will depend on the circumstances of the presentation. Relevant investigations include haemoglobin level, white blood cell count and coagulation profile including assessment of platelets. Pregnancy test is important to exclude

ectopic pregnancy. Urine microscopy and culture and blood culture may also be required.

Pelvic ultrasound is very useful in the evaluation of ovarian cyst. Ovarian dermoids and endometriomas have characteristic sonographic features [48]. Dermoids may be predominantly cystic or solid on ultrasound with posterior acoustic shadowing. Fine short echogenic strands may be seen within the cystic component representing hair. Endometriotic ovarian cysts are characteristically described on ultrasound as cyst filled with low level ("ground glass") internal echoes. In ovarian cyst torsion, fluid – fluid levels may be seen representing haemorrhage into the cyst but could also be completely anaechoic in other cases after absorption of the blood [45].

Treatment

Except in mild or early cases, most patients with complicated ovarian cysts will require surgical intervention. However conservative management is indicated in patients with Von Willebrands disease or known haemophiliac presenting with haemorrhagic ovarian cyst (response is usually rapid following therapy with factor VIII) and patients with ovarian hyperstimulation syndrome (OHSS) [45, 49].

For most cases of ovarian cyst accidents with acute or subacute symptoms, laparoscopy or laparotomy is usually required. Surgical procedures employed to manage ovarian cysts include aspiration and fenestration, cystectomy, oophorectomy or salpingo-oophorectomy.

The disadvantages of aspiration and fenestration (removal of a window of the cyst for histological analysis) include recurrence, spillage of cyst contents and failure to diagnose malignancy.

In a woman of less than 35 years of age, ovarian cysts are rather unlikely to be malignant. Thus, ovarian cystectomy or unilateral oophorectomy are safe treatments for unilateral ovarian cyst in this age group with preservation of reproductive potential.

Menstrual Disorders

Disturbances of menstruation are a major social as well as medical problem for women, having an impact on the lives of their families as well as the women themselves [50].

Menstrual disorders are not common gynaecological emergencies. Heavy menstruation is the most common form of presentation.

Although menorrhagia may result from underlying pathology such as fibroids, malignancy, infection and other bleeding diastheses, in the vast majority of cases there will be no organic disease and bleeding is termed dysfunctional [50]. Objective assessment of menstrual blood loss is essential as up to 50% of women complaining of heavy periods have measured blood loss within normal limits [50]. This can be measured accurately using alkaline-haematin method.

Clinical history will elucidate the severity of the bleeding and may reveal underlying disease. General examination should focus on signs of anaemia and systemic examination may detect abnormalities in the pelvic or abdomen.

Treatment

An adolescent or a younger woman suffering from acute menorrhagia can be treated with intravenous conjugated oestrogen 2.5mg every 4 hours until bleeding abates. Alternatively, monophasic oral contraceptives containing 35-50mcg of estradiol can be used for stabilization at a dose of one tablet thrice daily for 3 days then twice daily for 2 days and subsequently once daily until the pack is finished. The pill can be continued in the standard fashion for two months. Synthetic progestogens such as norethisterone and medroxy-progesterone acetate may also be useful [50].

For older women who complain of menorrhagia, detailed investigation is necessary if there are associated irregular bleeding pattern. This usually will involve ultrasonography, hysteroscopy and endometrial sampling in addition to the acute management of the haemorrhage/menorrhagia.

Bleeding from Gynaecological Malignancies

In some situations, advanced stages of cervical cancer may cause life threatening haemorrhage due to vascular erosion. Sub-urethral nodules secondary to metastatic deposit from choriocarcinoma may also cause severe acute haemorrhage. In these situations, bed rest, vaginal packing and application of monsel solution to the lesion can be used to arrest the haemorrhage.

Other treatment modalities include the use of haemostatic dose of external beam radiotherapy. Adequate blood transfusion should be given as appropriate. The patient can then be prepared for full treatment.

Where facilities exist, embolism of internal iliac or uterine arteries may also be used [51, 52]. In developing countries where such facilities may be lacking, ligation of the uterine or internal iliac artery may be an option.

Coital Laceration

Vaginal bleeding from coital laceration is not an uncommon presentation and has been observed as the commonest type of female lower genital tract injuries [53]. Most cases result from rough and hurried coitus due to inexperience or rape, therefore allowing minimal time for normal female sexual response and resulting in functional peno-vaginal disproportion. It may also result from true genital disproportion especially in pre-pubertal girls and young women at their first sexual intercourse. Posterior fornix constitutes the commonest site of injury [54].

Management of this injury involves prompt resuscitation with intravenous fluids and blood as appropriate and arrest of haemorrhage by repair of laceration in theatre. Exploratory laparotomy may also be necessary to evacuate haemoperitoneum and in cases complicated by gut prolapse. Broad spectrum antibiotics should also be administered.

Sexual Assault and Rape

Sexual assault refers to any form of non-consensual sexual act and need not involve penetration of an orifice [55]. It ranges from inappropriate touching to penetration or intercourse. Rape is the most serious

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sexual offence and has been defined as non-consensual penetration of the vagina or the anus by a penis [55].

Though not a common presentation, sexual assault including rape is underreported. Victims of sexual assault may present as gynaecological emergency especially if there has been genital injury or for fear of unwanted pregnancy. Physicians are increasingly more likely to come into contact with patients who have suffered sexual assault and assessing these patients can be challenging.

The principles of management include an initial comprehensive assessment of the patient, meticulous documentation, treatment of any genital or bodily injury, prophylactic antibiotic therapy and post exposure prophylaxis for HIV, emergency contraception, prophylactic vaccination against hepatitis B and psychological support [56]. Involvement of the police and forensic medical expert may be necessary.

During the initial assessment, detailed history should be obtained including the date, time, place and nature of assault. The possibility of drug assisted rape should be explored. During examination, attention should be focused on the patient's appearance, possible genital injury and swabs taken from the vulva, vagina, cervix, perineal and rectal area as appropriate. Blood and urine samples may need to be taken for toxicological studies. Detailed documentation of clinical findings and results of investigations are important as these may become vital evidence in subsequent prosecution.

The incidence of genital injury following rape varies between 10% and 80% and non-genital injuries vary between 31% and 82% [55]. Majority of genital injuries are minor but occasionally patients with vaginal or anal trauma such as laceration may need urgent suturing in theatre.

Prophylactic antibiotic should cover for common sexually transmitted infections, and post exposure prophylaxis for HIV should be offered, guided by the risk of acquisition.

Risk of pregnancy following rape has been stated to be 5% [57]. Patients should be tested to exclude pregnancy where appropriate and all patients should be offered emergency contraception where there is a risk of pregnancy. This could be hormonal or in form of IUCD.

Psychological morbidity following rape and assault is high. Over 50% of all rapes victims suffer post traumatic stress disorders [55]. Others may suffer depression, insomnia, suicidal ideation, sexual dysfunction and somatic complaints. In emergency situation, psychological therapy is not usually appropriate but psychological support and follow up should be arranged.

A higher prevalence of coital injuries has been reported in regions affected by conflict. In such situations, wilful cause of coital injury has been reported as being employed as a weapon of war [58]. Perpetrators deliberately introduce sharp objects into the victim's vagina to cause fistula.

CONCLUSION
Acute gynaecological emergencies are a common cause of morbidity and mortality in the tropics. Ectopic pregnancy and complications of unsafe abortion are the most common life threatening gynaecological emergencies. Access to ultrasonography, biochemical pregnancy testing, minimal access surgery and newer antibiotics will facilitate diagnosis and conservative treatment.

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