Chapter 2

Overview of Gynaecological Emergencies

Dagogo Semenitari Abam

Additional information is available at the end of the chapter

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1. Introduction

Gynaecological emergencies are disease conditions of the female reproductive system that threaten the life of the woman, her sexual function and the perpetuation of her fertility. Common gynaecological emergencies present as acute abdomen, abnormal vaginal bleeding, or a combination of both, and are often related to early pregnancy complications, pelvic inflammatory disease (PID) and contraceptive issues.

Some hospitals, mostly in the developed world, have specialist Emergency Gynaecology Units that provide fast intervention for acute gynaecological problems, such as pelvic pain, severe menorrhagia, vulvar problems, acute PID, hyperemesis gravidarum and post gynaecology surgical problems. These units are often manned by specialist nurses, sonologists and an on-call gynaecology medical team headed by a consultant gynaecologist. The aim of such a unit is to deliver adequate healthcare quickly, thus reducing the possible complications, and in so doing reducing the morbidity and mortality associated with such cases.

Advances in sonography, biochemical pregnancy testing, minimal access surgery and new antibiotics have led to early diagnosis of these conditions and adoption of more conservative approaches to treatment.

The basic objective of this chapter is to have an overview of these emergency gynaecological conditions on an individual basis, and their management. The management of these cases often requires history taking, clinical examination, investigations, both general and specific, and instituting the required treatment plan. Time is of the essence in these cases and so often there is an overlap in the management steps, with some requiring immediate resuscitation.

2. Ectopic pregnancy

Ectopic pregnancy is one in which the conceptus implants outside the normal endometrial lining of the uterus, with the vast majority, over 95%, occurring in the fallopian tube [1]. It is a life-threatening gynaecological emergency and a leading cause of maternal morbidity and mortality in the early half of pregnancy [2], [3].

The incidence of ectopic pregnancy is increasing worldwide [4], and reported incidence varies from 1:60 to 1:250 pregnancies, and is dependent on the incidence of genital tract pathology and contraceptive practices of the population studied [5].

Delay in the diagnosis of ectopic pregnancy can be catastrophic because of the associated haemorrhage. Ectopic pregnancy should always be ruled out when a woman in the reproductive age bracket presents with a missed period and abdominal pain.

There should be a high index of suspicion for early intervention and reduction of morbidity and mortality [6]. The presentation could be acute or chronic. Patients usually present with lower abdominal pain and minimal vaginal bleeding after 5-8 weeks period of amenorrhoea. There could also be shoulder tip pain and fainting spells if intraperitoneal bleeding is massive.

It is mandatory that patients with ectopic pregnancy be managed in a hospital. Sensitive pregnancy test and ultrasonography, preferably a transvaginal scan, aid in initial diagnosis. Laparoscopy may also be used to diagnose ectopic pregnancy, but fails to detect early ectopic pregnancies or those obscured by adhesion. Diagnostic mini-laparotomy comes into play here.

Expectant or medical management of ectopic pregnancy should be considered in selected cases, but they are not widely practiced [7]. Some ectopic pregnancies resolve spontaneously, and this is the basis for expectant management. Methotrexate is employed for medical management in patients with unruptured ectopic pregnancy who are haemodynamically stable [8].

Surgery remains the mainstay of treatment of ectopic pregnancy. Surgical management is carried out by laparoscopy (Fig. 1) or laparotomy. For tubal pregnancy surgery may be radical (salpingectomy) or conservative (usually salpingostomy). For patients with ruptured ectopic pregnancy, especially those who present late, resuscitation and emergency laparotomy and salpingectomy are often required [9].

Patients managed for ectopic pregnancy require counselling because of the risk of recurrence, which is up to 20.5%, and such cases often give rise to diagnostic dilemma, especially when it occurs in an ipsilateral location [10]. Misdiagnosis of ectopic pregnancy may lead to dire consequences and an increase in case fatality [11, 12].

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Figure 1. Laparoscopy equipment.

3. Miscarriage

The World Health Organization (WHO) defined abortion (preferably termed as miscarriage) as the termination of pregnancy prior to 20 weeks of gestation, or the birth of a fetus weighing less than 500g in case the period of gestation is not known. It is noteworthy to state here that a very early miscarriage can sometimes be assumed to be a delayed menstrual period.

There are several types of miscarriages – threatened, inevitable, incomplete, complete, missed, septic, spontaneous, habitual and induced. Miscarriages are a common problem. Approximately 75% of all miscarriages occur before 16 weeks of gestation and of these nearly three-quarters occur within the first 8 weeks of pregnancy [13].

Abortions, mostly the unsafe, are a leading cause of maternal mortality worldwide, accounting for a global average of 13% of fatalities related to pregnancy [14]. Estimates by the WHO give a global annual total of 42 million induced abortions, with 20 million being unsafe [15, 16]. About 98% of unsafe abortions occur in developing regions [16, 17]. Unsafe abortion generally refers to termination of unwanted pregnancy either by persons lacking the necessary skills or it being performed in an environment lacking the minimal medical standards, or both.

Vaginal bleeding with associated abdominal pain is a common complication in the first half of pregnancy, and most miscarriages present in this manner. There is a psychological impact of early pregnancy loss on women, their partners and families. For some there is need for psychological support.

For the management of miscarriages there is need for proper patient assessment with respect to the history and clinical evaluation, with the need to rule out ectopic gestation. If the vaginal bleeding is moderate to severe and the patient is in some distress or shock, an intravenous line should be set up with a wide bore cannula and crystalloids quickly infused, and blood samples collected for complete blood count and cross-matching of blood for possible transfusion.

Uterine evacuation is the management option for miscarriages, except for threatened miscarriage which requires a conservative approach. Retained products of conception may lead to infection and haemorrhage.

Surgical uterine evacuation is done either by vacuum aspiration or by sharp curettage. The use of the metal curette is not without complications, which invariably includes anaesthetic risk, risk of infection, bleeding, cervical trauma, uterine perforation, long term complications of decreased fertility and abnormal menstruation, including Asherman's syndrome. The suction curettage is safer and easier than the metal/sharp curettage.

Non-surgical management options for miscarriages include expectant management and medical treatment. Expectant management requires an understanding of the course of an abortive process, which includes resorption of early pregnancies to complete abortion. Here, there is a need for close monitoring and early intervention if the need arises. Medical treatment on the other hand involves the use of drugs to achieve uterine evacuation. The medications used here are the prostaglandins and their derivatives like misoprostol, and the antiprogestogens like mifepristone.

With expectant and medical treatment, the risks and side effects include unpredictability of the timing until the abortion is completed (with the possibility of significant pain and bleeding requiring an emergent curettage) and retained products of conception requiring surgical intervention. Expectant and medical treatments of abortion assume that prompt medical evaluation and possible intervention are immediately on ground if required, otherwise they should not be considered.

Septic abortion results from any type of miscarriage complicated by infection, especially unsafe abortion, resulting in foul smelling vaginal discharge and/or bleeding, with fever and lower abdominal pain/tenderness. Here, it is advised to cover with appropriate intravenous antibiotics for at least 6 hours prior to evacuation of retained products of conception. The antibiotics should be continued for a total of 14 days.

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For missed abortion, there is a need to ripen the cervix before evacuation of retained products of conception after having confirmed the diagnosis by ultrasonography, which is often repeated in cases of very early gestations to ascertain non-viability, and making provisions for management of disseminated intravascular coagulopathy (DIC) if such should arise.

Habitual abortions, which entail at least three consecutive miscarriages, would require screening of patients before they embark on future pregnancy, but most turn out negative. Only a few, those positive for antiphospholipid antibodies (APA), can be treated with anticlotting agents, like aspirin, enoxaparin (clexane) and heparin, to improve outcome. For those with cervical incompetence resulting in second trimester miscarriages or early preterm births, cervical cerclage procedures may need to be performed between 14-16 weeks of gestation. Most of those with habitual abortion still have a successful pregnancy.

The complications of abortions, mostly haemorrhage and infection, and iatrogenic injuries like perforated uterus (Fig. 2) and gut injuries [18, 19, 20] cut across the different types of abortions, especially if the secondary care given for cases of spontaneous incomplete abortion is less than optimal. Laparoscopy, and/or laparotomy, is indicated to determine the extent of injury and to properly manage.

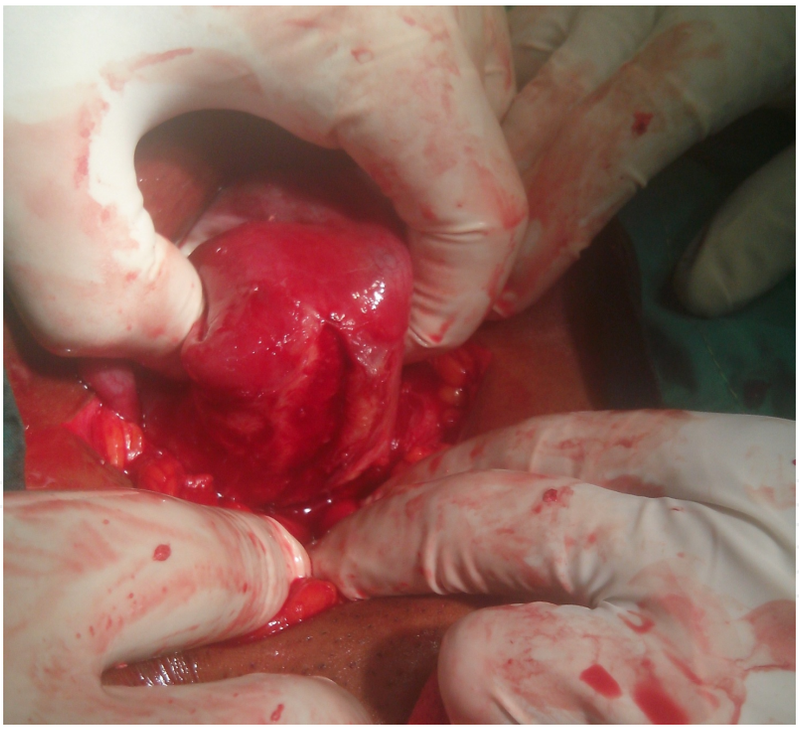

Figure 2. Perforation on the anterior uterine wall following instrumentation demonstrated at laparotomy.

Most healthcare systems expend far more resources treating complications of unsafe abortion than they would to provide safe abortion services [21, 22]. These costs are mostly on beds, antibiotics, blood transfusions services, surgeries and management of subsequent long term complications like ectopic pregnancy and infertility.

There is the need to send the specimen obtained from uterine evacuation for pathological analysis and for cervical/vaginal cultures to be obtained in cases of infection. Histopathological study may also exclude gestational trophoblastic diseases which can present in a similar manner to the miscarriages, may require suction evacuation of the uterus, but also do require a specific follow up plan, which may indicate the need for further treatment.

4. Severe pelvic pain

Based on the history pelvic pain could either be cyclical or non-cyclical. Cyclical pain is commonly as a result of pre-menstrual syndrome, pelvic endometriosis, primary dysmenorrhoea and ovulation pain (Mittelschmerz). For non-cyclical pain the common causes include pelvic inflammatory disease (PID), severe endometriosis, pelvic tumours, pelvic congestion syndrome and surgical causes like appendicitis and diverticulitis. A good history is required to make a possible diagnosis. The nature of the pain, whether cyclical or non-cyclical, acute or chronic (if present for 6 months or more), severity and exacerbating and relieving factors should be noted. Other associations to be noted include the parity, vaginal discharge, abnormal vaginal bleeding, dyspareunia, urinary symptoms, gastrointestinal symptoms, loss of appetite, weight loss and cervical smear.

Examination of the patient would involve general and systemic examinations, most especially the abdomen, pelvis and vagina. Pallor, wasting, abdominal distension, masses in the abdomen and pelvis, and abnormal growth in the lower genital tract should be sought for.

For the investigations, ultrasonography of the abdomen and the pelvis plays a key role. A growth in the lower genital tract may require a biopsy, and tumour marker screen for cancer antigen 125 (CA-125), carcino-embryonic antigen (CEA) and alpha feto-protein (AFP) may be required for pelvic tumours. A complete blood count, C-reactive protein and urine culture are often required. Diagnostic laparoscopy, when available, is a positive addition in the management of chronic pelvic pain when there is diagnostic difficulty, but not forgetting idiopathic pain.

5. Ovarian cysts

Tumours of the ovary are common in women, with about 80% being benign and occurring in the reproductive age group [23]. Ovarian tumours are multifaceted and their classification is based on the historical cell of origin [24, 25]. About 70-80% of primary ovarian tumours are epithelial in origin, 10% stromal and 5% germ cell, while the rest fall into other groups [26]. Dermoid cyst is one of the commonest ovarian tumours in child-bearing age [27], and 10% of cases are diagnosed during pregnancy [28].

Generally, ovarian cysts that are painful may be as a result of torsion (Fig. 3), haemorrhage, rupture, be endometriotic or cancerous. Torsion of ovarian cyst commonly presents as severe

acute lower abdominal pain that is often associated with nausea and vomiting. The abdomen is usually tender, with a palpable pelvic mass on bimanual pelvic examination and ultrasonography would reveal a large ovarian cyst. Such patients should be managed in a hospital and they require emergency surgery, usually a laparotomy. Conservative surgery (cystectomy) is usually carried out, but sometimes ovarectomy is done.

Figure 3. Torsion of left ovarian cyst (see torted stalk). This patient also had subserous uterine fibroids.

Ruptured ovarian cyst presents in a similar way to torsion of ovarian cyst. The patient may be known to have an ovarian cyst but this is no longer seen on ultrasonography. There may be evidence of peritonitis, including chemical peritonitis if the cyst was originally a dermoid cyst [29], and haemoperitonium. The patient would probably require a laparotomy if the condition worsens and so should be admitted to hospital urgently.

6. Uterine fibroids

Uterine leiomyomas or fibroids are benign tumours that arise from the myometrial smooth muscle fibres. They are the commonest tumours found in the human body. It is estimated that one-fifth of all women have one or more in the uterus at death [30]. Fibroids are present in 20-25% of women of reproductive age, commonly associated with nulliparity, and for some uncertain reasons are 3-9 times more common in blacks [30, 31]. Most uterine fibroids are symptomless but 35-50% of patients have symptoms [31], and these are dependent on their location, size, state of preservation and/ or degeneration, and whether or not the patient is pregnant.

Fibroids are usually not painful. Acute pain may arise under certain circumstances, such as torsion of pedunculated fibroids, degeneration (especially red degeneration), associated endometriosis/adenomyosis, and/or expulsion of pedunculated submucous fibroids through the cervix [32]. Fibroid also rarely causes acute pain when it outgrows its blood supply, thereby causing necrosis. Spasmodic dysmenorrhoea may result when expulsion of a pedunculated submucous fibroid stimulates uterine contraction [32]. Sarcomatous change, which occurs in 0.1-0.5% of cases [31], can result in pain as well. There is the need to look out for other co-morbid conditions in cases of fibroids associated with pains.

With respect to the treatment of fibroids the factor considered in this section is the pain, therefore the patient has to be thoroughly evaluated; history, examination, and investigations. Pain is generally managed with the use of analgesics, ranging from acetaminophen (paracetamol) to non-steroidal anti-inflammatory drugs and opioids. Definitive treatment would require surgery if analgesics alone, sometimes with antibiotics in cases associated with infection, fail to alleviate the symptoms. There is usually no room for use of medical treatment options for fibroids presenting with acute abdomen or severe pains.

Definitive surgical modalities for management of uterine fibroids include myomectomy, which leaves behind a functional uterus and thus preserving fertility, and hysterectomy, which is desirable for patients over 40 years of age and those not desirous of future fertility. Both procedures can be carried out via the abdominal route, vaginal route, or even laparoscopically. Hysteroscopic myomectomy is indicated for submucous fibroids complicated by abnormal bleeding with pain. Robotic surgery is employed in high technology medical facilities, especially in countries with advanced healthcare systems.

7. Acute Pelvic Inflammatory Disease

Pelvic inflammatory disease (PID) is a spectrum of inflammatory disorders of the upper female genital tract, including any combination of endometritis, salpingitis, oophoritis or tubo-ovarian abscess and pelvic peritonitis/cellulitis. Sexually transmitted organisms, particularly Neisseria gonorrhoeae and Chlamydia trachomatis, are implicated in many cases. Organisms of the vaginal flora however also cause PID, which is often polymicrobial.

There is a worldwide increase in the incidence of PID, and it is the most common infectious disease that affects young women and accounts for a significant percentage of the morbidity that is associated with sexually transmitted diseases (STDs). Although it does not usually constitute an emergency in the sense that immediate treatment is life-saving, urgent treatment is required to minimize the effect of the disease on subsequent fertility and reduces the risk of sequelae such as ectopic pregnancy and chronic pelvic pain. This applies to both mild and severe disease.

The diagnosis of PID is usually based on clinical features although clinical diagnosis is usually imprecise, and many cases of PID go unrecognized or are subclinical. These patients are usually young, sexually active, and complain of abdominal pain, with or without fever

and vaginal discharge. Bimanual pelvic examination usually elicits extreme tenderness on movement of the cervix, uterus and parametria. On laboratory investigations, saline microscopy of vaginal discharge may show abundant leucocytic infiltration, complete blood count may reveal leucocytosis, and C-reactive protein and erythrocyte sedimentation rate may be raised.

Endocervical swab may be positive for infection with N. gonorrhoeae and C. trachomatis. The true significance of this is questionable and the results lack consistency. However all women who have acute PID should be tested for these organisms, and screened for other STDs [33].

Endometrial biopsy, though not often done in practice, is more specific and usually shows histopathologic evidence of endometritis. Imaging, most especially transvaginal ultrasonography, showing thickened fluid-filled tubes with or without free fluid in the pouch of Douglas or tubo-ovarian mass are quite specific for PID. In less complicated cases imaging may be normal.

Laparoscopy is the gold standard for diagnosis of PID. However limited access and attendant surgical risks preclude its universal use for this purpose. The criteria for diagnosis of PID using laparoscopy include visualizing an overt hyperaemia of the tubal surface, oedema of the tubal wall, and sticky exudates on the tubal surface and/or fimbrial ends. All 3 are required for diagnosis.

The treatment of PID is essentially empirical, with use of antibiotics (parenteral and oral) for 10-14 days. Based on the severity and response to treatment this can either be done on outpatient or inpatient basis. Goals of treatment are to alleviate the acute symptoms of inflammation, and prevent the long term sequelae associated with PID. There may be need for contact tracing and treatment of sexual partners. Follow up and education are necessary to prevent re-infection and complications.

For those complicated by tubo-ovarian abscess unresponsive to extended antibiotic therapy, surgical management involving exploratory laparotomy by an experienced gynaecologic surgeon may be required. The extent of the surgery depends on the extent of the disease, the patient's age and desire for future fertility. There is risk of injury to contiguous structures as a result of the inflammatory process, which may cause adhesions and a frozen pelvis.

8. Pelvic endometriosis

Endometriosis is the presence of endometrial stroma and glands outside of the uterine cavity. The pelvis is the commonest site, with the reproductive organs the most frequently affected [34]. The most common symptoms related to it are dysmenorrhoea, dyspareunia and low back pain which worsen during menstruation, and subfertility. It is a leading cause of disability in women of reproductive age, and the pain may be mild, or it may be severe enough to negatively affect health-related quality of life.

Endometriosis remains a difficult clinical problem and quite a number of patients are often referred to other specialists before seeing the gynaecologist [35]. Painful symptoms, especially

when cyclical, may be caused by endometriosis, and it is the underlying cause of pelvic pain in 15% of cases [36]. The exact prevalence is unknown because surgery and/or histology is required for its diagnosis, but estimates of 3-10% of women in the reproductive age group, and 25-35% of infertile women have been made [37].

The symptoms of endometriosis and the laparoscopic findings do not always correlate [38]. The focus during management should be on the illness rather than the disease. There is no place for medical treatment of endometriosis with drugs in infertile women desirous of having babies [39]. Surgery can be done via laparotomy or laparoscopy [40, 41]. Analgesics are often required for symptomatic relief of pain. Unlike infection, endometriosis does not damage the luminal epithelium of the fallopian tube, and thus conservative surgery is more likely to be successful in restoring normal anatomic relations. However, endometriosis is also a well known cause of frozen pelvis.

9. Severe vaginal bleeding

Severe vaginal bleeding may or may not be related to menstruation. Common causes are dysfunctional uterine bleeding (DUB), uterine fibroids, adenomyosis and genital tract malignancy.

Normal menstrual cycles range from 21-35 days, with the estimated blood loss less than 80 ml, with flow not more than 7 days. Most women who complain of heavy periods have normal loss. Extremely heavy menstrual loss is uncommon and other causes such as a miscarriage or a genital tract malignancy like carcinoma of the cervix or endometrial carcinoma should be ruled out. If the patient is symptomatic after a heavy menstrual loss, like having dizziness or fainting spells, appears pale or has tachycardia, she should be admitted to hospital for treatment.

Patients with massive vaginal bleeding require resuscitation which includes securing of intravenous access with a wide bore cannula, obtaining blood samples for a complete blood count and infusing of crystalloids. Possible causes of the vaginal bleeding should be ruled out. There is the need to correct anaemia with haematinics and even blood transfusion.

Control of bleeding may be achieved by use of haemostatic drugs like tranexamic acid (an antifibrinolytic agent) and ethamsylate, or by hormonals like medroxyprogesterone, prior to definitive treatment of the cause. Mirena, a levonorgestrel-impregnated intrauterine system, and endometrial ablation techniques like the NovaSure system may also be employed [42] for control of bleeding.

The definitive treatment is dependent on the cause and emergency dilatation and curettage (D&C), myomectomy, and even a hysterectomy (Fig. 4) are possibilities. For those emanating from gynaecological cancers referral to oncology units with expertise in their management is required.

Figure 4. Hysterectomy specimen of a 50-year old woman who had total abdominal hysterectomy and bilateral salpingo-oophorectomy for uterine fibroids associated with menorrhagia.

10. Vulvar abscesses

Bartholin's cysts are the commonest cysts of the vulva, and they are of two types, a cyst of the duct and a cyst of the gland, with differentiation made on histology using the surface epithelium. The position of the swelling at the junction of the anterior two-third and the posterior one-third of the labia majora is diagnostic. Bartholin's abscesses are secondarily infected cysts. Organisms involved in the infection of the gland are similar to those responsible for PID [43, 44].

Drainage should be established whenever an abscess develops. Apart from the pains, which may be severe, there is the theoretical risk of ascending infection, with a more extreme inflammatory process, with systemic symptoms and signs of infection, and these may affect the quality of life. Cases of necrotizing fasciitis have been reported in immuno-compromised women, including those with diabetes mellitus. Septic shock and toxic shock-like syndrome can also complicate Bartholin's abscess [45], [46].

The treatment of Bartholin's abscess encompasses bed rest, use of antibiotics and analgesics, coupled with surgical drainage and warm sitz bath. The procedure of choice for surgical drainage is marsupialization, and this has the advantage of preserving the gland, which continues its secretory function and prevents recurrence by the creation of a new gland ostium or fistula to replace the function of the presumed damaged or obstructed duct. Simple incision and drainage (I&D) of the abscess is associated with a high recurrence rate.

Abscesses that rupture spontaneously are treated by warm sitz bath. Gland excision is not recommended for Bartholin's abscess because of the risk of spread of infection which may result following surgery in an inflamed hyperaemic tissue environment [47].

Another less common vulvar abscess is that involving the Skene's gland. Treatment basically follows the same principles as that for Barthoin's abscess.

11. Toxic shock syndrome

Toxic shock syndrome is a rare entity primarily occurring in menstruating women and caused by exotoxins produced by penicillinase-producing non invasive Staphylococcus aureus of phage type 1. It is associated with use of super absorbent tampons, especially if left in place for long. Tampon use may also excoriate the cervical and vaginal mucous membranes, thereby encouraging absorption of the exotoxin.

Non-menstrual toxic shock syndrome has been reported with prolonged use of contraceptive diaphragm or sponge [48], after delivery, laser therapy for condylomata acuminatum [49] and non-gynaecological surgery.

Toxic shock syndrome can also be caused by some streptococcus species, including Streptococcus viridans which causes a more fulminant disease with high mortality.

The clinical manifestations of toxic shock syndrome are diverse and these often develop rapidly in otherwise healthy persons. These include sudden onset of high fever, hypotension, and associated symptoms like vomiting, diarrhoea, myalgia, abdominal pain, and headache. A characteristic "sunburn-like" rash, a diffuse maculopapular erythroderma, appears over the face, trunk and proximal extremities over a period of 5-14 days, which later desquamates, especially over the palms and soles during convalescence. Multi-systemic involvement is typical and these include coagulopathy, renal, hepatic, muscular, cardiovascular, neurological and respiratory systems.

On taking a history, ask the patient if she is menstruating or using tampons. A vaginal examination should be performed and any foreign body in the vagina such as tampon or contraceptive device should be removed.

The diagnosis of toxic shock syndrome is usually clinical. A full septic and biochemical screen should be done to exclude multiorgan failure. Isolation of the exotoxin for Staphylococcus aureus is pathognomonic.

Treatment entails aggressive supportive therapy, preferably in an intensive care unit. Fluid resuscitation is necessary, and vasopressors, packed red cells and coagulation factors, mechanical ventilation and haemodialysis may be required. Antibiotics, given intravenously, are used for 10-14 days to eradicate the organism. Protein synthesis inhibitors such as clindamycin which suppress toxin production are more effective than cell wall active agents like beta-lactams. Cephalosporins or beta-lactamase-resistant penicillins like nafcillin or oxacillin, and vancomycin (for penicillin-allergic patients) may also be used. Since toxic shock syndrome is

toxin related, antibiotic treatment is not directly effective, but it reduces the bacterial load and ultimately prevents further toxin production.

12. Sexual violence

Rape definitions vary from country to country, but generally regarded as the physically forced entry or the otherwise coerced penetration of the mouth, vulva, vagina or anus with a penis, other body part or object. It is an act of sexual violence. It can result in serious short and long-term physical, mental, sexual and reproductive health problems for victims and their families and can lead to social and economic costs.

Health consequences may include headache, back pain, abdominal pain, gastrointestinal disorders, limited mobility and poor overall health. Non fatal and fatal injuries can also result.

Rape can result in unwanted pregnancies, gynaecological problems, induced abortions, sexually transmitted infections, including human immunodeficiency virus (HIV) and hepatitis B infections. Mental disorders like post-traumatic stress disorder, sleep difficulties, depression, suicidal tendencies and drug and alcohol abuse can arise.

Some gynaecologists hardly receive proper orientation or training in managing intimate partner violence as part of their medical training and therefore tend to underestimate the extent of the problem and feel insufficiently skilled to deal with it [50]. Treatment here typically involves dealing with coital lacerations, STDs, including HIV and hepatitis-B post-exposure prophylaxis, tetanus prophylaxis, and emergency contraception to prevent unwanted pregnancy. Due to the extent of coital injuries, especially when foreign objects are used, emergency laparotomy may be required.

It is crucial that advice is sought from the police or sexual assault referral centre before undertaking any examination for forensic reasons, unless it is life-saving. Pictures of the victim, multiple swabs and aspirations from body cavities and parts, and a whole lot more may need to be taken. A checklist may be required to follow due process on the management of such cases, as well as employing the services of a clinical psychologist or psychiatrist for long-term management.

Author details

Dagogo Semenitari Abam*

Address all correspondence to: dagabam@yahoo.com

Department of Obstetrics and Gynaecology, Faculty of Clinical Sciences, College of Health Sciences, University of Port Harcourt, Nigeria

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