

Current Concepts in the Management of Pelvic Inflammatory Disease

Dr. Akin – Tunde A. Odukogbe¹ and Dr. Bolarinde Ola²

¹*Senior Lecturer / Consultant, Department of Obstetrics and Gynaecology, College of Medicine / University College Hospital, University of Ibadan, Ibadan.*

²*Consultant Obstetrician and Gynaecologist and Subspecialist in Reproductive Medicine, Sheffield Teaching Hospital, NHS Foundation Trust, Sheffield, S10 2SF*

INTRODUCTION

Pelvic inflammatory disease (PID) occurs when exogenous or endogenous micro organisms, mostly bacteria, infect the cervix, uterus, fallopian tubes, ovaries, parametrial structures [1] and the pelvic peritoneum.

It is a major public health problem in the developing countries where its control is hampered by suboptimal diagnosis, substandard treatment and virtually no contact tracing. The management and control of PID continue to be the subjects of extensive research.

Epidemiology

The disease occurs mostly in the reproductive age group when sexual activities are highest. Adolescents often experiment with sex [2], whereas they are usually inexperienced in bargaining with their partners regarding the use of condoms. Furthermore, adolescents in most developing countries are not entitled to free health services compared with those from other parts of the world. Although this group forms only 10% of the US and UK populations, they account for about 26% in the UK and up to 50% in the USA, of all cases of gonorrhoea [3,4,5]. Orji and Esimai [6] studied the sexual behaviour and contraceptive use among 300 secondary school students aged 13 to 19 years in Ilesa, Southwest Nigeria. Half of the girls were sexually active; with 68.7% of them having multiple sexual partners and 86.7% not using contraception. Thirty two of the

40 students who were contracepting used condom, and most only commenced its use about one year after the onset of sexual activity. These facts are confirmed by studies from other countries [6,7,8]. Similar findings are noted among medical students [9] and undergraduates in the same Southwest Nigeria [10].

Apart from the immediate symptoms of pain, vaginal discharge, dysuria and dyspareunia, long-term complications of chronic pelvic pain, infertility [11], marital disharmony, low productivity and ectopic pregnancy contribute to the complexity of this condition. Sometimes complications such as septicaemia can be fatal; and when HIV infection progresses to acquired immunodeficiency syndrome (AIDS), death usually results eventually. Among the sexually transmitted organisms, chlamydial infection is now more common than gonorrhoeal disease in virtually all countries [3,12,13,14].

Although mostly acquired sexually in the primary cases, PID may also follow septic abortion [15], douching [16,17] or complicate the puerperium. It sometimes complicates pelvic instrumentations such as dilatation and curettage or insertion of intrauterine contraceptive devices. Secondary infections can occur from intraperitoneal spread of organisms causing appendicitis [18].

Clinical Diagnosis

The triad of fever, lower abdominal pains and vaginal discharge strongly suggests the presence of PID. Other symptoms include vomiting, diarrhoea, dysuria, coital difficulties and abnormal uterine bleeding. Unfortunately many cases are symptomless [16] or mimic conditions like urinary tract infection, appendicitis and ovarian cyst. Examination may show a distressed patient, more likely, in acute infections than in chronic cases. The temperature may

All Correspondence to Dr A. A. Odukogbe

Department of Obstetrics and Gynaecology,
College of Medicine / University College Hospital, University of Ibadan, Ibadan.

P. M. B. 5116, G. P. O. Dugbe, Ibadan.

Telephone: 234 2 2410088 Ext. 3728, 0802 331 4205

Fax: 234 2 2413545, 2411768

Email: akin_tundeodukogbe@yahoo.com

be elevated and abdominal tenderness, brownish or yellowish and offensive vaginal discharge may be present. All these form the syndromic approach to diagnosis advocated for use in resource poor nations. Its usefulness still needs to be ascertained by larger randomised controlled trials [19], even though its diagnostic accuracy has been quoted by some authors to be around 35 – 65% [18].

The use of the laparoscope has revolutionised the diagnosis of pelvic inflammatory disease, since its first use in the early sixties [20]. Findings in acute cases include erythema, oedema and swelling of the fallopian tubes with seropurulent exudation from the fimbrial ends [18]. Pyogenic membranes may also be evident. The severity of these changes has been grouped into mild, moderate and severe [18]. In chronic cases filmy and / or thick adhesions with abscess cavities are obvious. Following chlamydial infection, filmy adhesions over the liver is suggestive of perihepatitis (Fitz-Hugh-Curtis syndrome).

Laboratory Diagnosis

Laboratory diagnosis helps to establish the causative organisms and the effects of the disease on the body's systems, to determine the best antibiotic therapy and to monitor the effectiveness of treatment. It is however expensive compared to clinical diagnosis [21]. Swabs taken from the vaginal fornices, endocervix, urethra or the rectum confirm diagnosis. These swabs and midstream urine specimens are sent for microscopy, culture and sensitivity. Chlamydial infection is diagnosed by Nucleic Acid Amplification Tests (NAAT) using either polymerase chain reaction (PCR) or ligase chain reaction (LCR) on urine and cervical swabs. However, NAAT may not be readily available in developing countries.

In complicated cases with haemolysis following septicaemia, or after menorrhagia, the packed cell volume may be low. Although leucocytosis frequently occurs with PID, in sinister situations, leucopenia may accompany gram-negative infection.

In suspected pelvic tuberculosis with endometritis or pelvic abscess, pelvic ultrasound

scanning and endometrial biopsy may be helpful [22, 23, 24, 25].

Treatment Options

The syndromic approach to treatment, incorporated into the primary health care system of developing countries is effective when properly used and continuously evaluated [18, 21]. Cure rates of up to 70% have been documented by Mwijarabi and Mayaud in Mwanza, Tanzania with the advantage of single clinic visits [26], and at rates as low as one fifth that of the laboratory based approach in one study from Cote d'Ivoire [27]. Unfortunately, problems of poor policy formulation, implementation and evaluation usually lead to malfunctioning of the healthcare system. This threatens the success of this otherwise cheap and effective method of management.

Undermining the advantages of syndromic treatment however are the possibilities of overtreatment [21]; poor detection rates for chlamydial and gonorrhoeal infections [28, 29]; and low presentation rates in cases where there are no symptoms [29, 30].

Results of laboratory tests are usually not available before the commencement of antibiotic therapy especially in acute cases. Therefore, empirical, broad spectrum drugs are employed against *Chlamydial trachomatis*, *Neisseria gonorrhoea*, gram negative facultative bacteria, anaerobes and streptococci [22, 31]. Such patients are usually hospitalized and given parenteral antibiotics like the third generation cephalosporins, quinolones, in combination with doxycycline, and metronidazole for 24-72 hours followed by oral therapy to complete a 14-day course.

Ideally such antibiotic use should be determined by regularly reviewed local protocols to prevent bacterial resistance [32]. Analgesics including nonsteroidal anti-inflammatory drugs [33] and other supportive therapy are also given.

Infection by *Mycobacterium tuberculosis* is endemic in some countries like India, and parts of Africa [16] and requires anti tuberculosis therapy. All patients with STD ideally should be screened after counselling for HIV infection. In order to reduce the spread of infection, contact tracing is essential.

MANAGEMENT OF COMPLICATIONS

Infertility

Advances in laparoscopic and microsurgical techniques have improved the success rates associated with tubal surgery. Adhesiolysis, salpingostomies and tubal re-anastomosis can now be expected to result in pregnancy rates of 20-50% at the end of the first year following surgery.

Artificial Reproductive Techniques (ART) including in vitro fertilization and embryo transfer (IVF), Intra Cytoplasmic Sperm Insemination (ICSI) can be employed to achieve pregnancy in cases of fallopian tube occlusion with or without male factor contributions. If obstructive azoospermia results from STD, surgical sperm retrieval techniques are now available, including in many developing countries. Additionally, when PID has destroyed the ovaries or when oophorectomies have been performed for intractable tuboovarian abscess, egg donation with IVF is an alternative method of achieving conception. Adoption is increasingly being accepted even in developing countries.

HIV / AIDS

In PID due to sexually transmitted organisms there is an associated risk of acquiring HIV / AIDS [34], an epidemic that is ravaging many people in low resource countries. As at December 2002, over 42 million people have been infected worldwide [35]. The highly active antiretroviral therapy (HAART) being made widely available promises to prolong life in these patients. There is increased susceptibility of HIV-infected patients, to cervical squamous intraepithelial neoplasia compared to those non-infected [36, 37, 38, 39]. Some workers have thus advocated that HIV-infected patients be screened more frequently.

Pelvic abscess

Following diagnosis and failure of medical therapy, early and conservative surgical management through colpotomy is advocated. Percutaneous drainage with guidance from ultrasound or computed tomography scan can also be used [22], with less operative morbidity. Unfortunately in the developing world where late and suboptimal use of antibiotics results in much abdominopelvic adhesion, drainage by

means of laparotomy is preferred, resulting in increased cost and hospital stay.

PID in Pregnancy

This is very rare due to the protection offered by the cervical mucus. However the occurrence of pelvic abscess associated with pregnancy has been reported [40], and this may pose management difficulties.

Ectopic Pregnancy

The use of high resolution transvaginal scan together with colour Doppler and serial estimation of quantitative β -human chorionic gonadotrophin (β -HCG) has reduced the need for laparoscopic intervention in the diagnosis and treatment of unruptured ectopic pregnancy [41]. In such cases, systemic methotrexate given as medical therapy is a promising treatment that is associated with better preservation of fertility and little morbidity when compared to surgery [2, 41].

PREVENTION

Pelvic inflammatory disease is associated with reproductive and sexual ill health in individuals with dire consequences on the society as a whole. Most countries especially the resource limited ones have poor control of STDs, the major causative organisms of PID [42].

Primary prevention involving health education of the susceptible individuals is the most effective method of controlling the disease [43, 44]. The best time to start health education has been a matter of debate, although most authors will now favour an earlier age [38, 45].

Unfortunately most of the adolescents (especially in the developing countries) who are sexually active and desire barrier contraception are barred from its use due to their young age and unmarried status [46] or because of high cost. Prompt and accurate diagnosis coupled with early and effective treatment constitutes the secondary form of prevention.

CONCLUSION

PID is a major reproductive health issue in all the countries of the world on account of its complications

including HIV / AIDS. The current concepts concerning its management and control especially in the developing world have been highlighted.

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