Evaluation of Unexplained Infertility and its Relationship with Broad Ligament Varicosities

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Abstract

Objectives: To evaluate the relation between the broad ligament and ovarian varicosities (female varicocele) and unexplained infertility and to determine the effect of the suggested surgical management on restoration of fertility in these cases.

Design: This study is a prospective clinical and surgical follow-up study. Cases were randomly selected among patients with unexplained infertility while fertile cases were taken as control.

Setting: Department of Obstetrics and Gynecology, Faculty of Medicine, Kasr El Aini, Cairo University, Egypt and Al Sabeen Teaching Hospital, Sana'a University, Yemen.

Patients and Methods: 50 cases of unexplained infertility and 25 fertile cases were randomly selected for this study. Diagnosis was essentially done during surgery by observing the changes in these veins in the Trendelenburg and anti-Trendelenburg positions. Unexplained infertility proved to have broad ligament varicosities were surgically managed and were followed for the results of that treatment in the following year.

Results: Diagnosis of the unexplained infertility showed the female varicocele to occur in 54% of cases, all of them were of the second and third degrees. The follow-up results showed the occurrence of pregnancy in 10 cases. Two of them ended by abortion and the rest continued to full term. Recommendations for diagnosing female varicocele, its grading and the technique of its surgical management were also recorded in details.

Conclusions: Female varicocele was a significant cause of unexplained infertility. Its surgical management resulted in significant cure of infertility.

Key Words: Broad ligament varicosities – Pelvic varicocele – Unexplained infertility.

Introduction

UNEXPLAINED infertility is not an uncommon finding in female infertility. It is defined as a state of infertility in which the routine available investigations of infertility show no abnormality and the couple is diagnosed as normal and the infertility as being unexplained [1]. It has variable incidence and variable causes which are known to be difficult to diagnose due to their presence in a subclinical form. These may need special investigations and diagnostic techniques [23]. The luteinized unruptured ovarian follicles, antiphospholipid syndrome, certain immunological defects, psychological defects, certain endocrinal defects, pelvic varices and pelvic endometriosis may be the commonest causes of such condition [4].

Pelvic varices in women consist of tortuous and dilated parauterine broad ligament and ovarian veins. They are often bilateral. Concomitant paravaginal, pelvic sidewall and internal iliac varicosities may also be present. Occasionally, pelvic varices may communicate with vulvar and lower extremity varices. There may also be associated with ovarian vein reflux [5].

Pelvic varices may be primary or secondary. The primary occur de novo, without any underlying pathology, and they are responsible for causing the pelvic congestion syndrome, chronic pelvic pain and infertility [6]. It occurs commonly due to thin-walled and unsupported structure of the veins, the presence of few valves, multi-parous gravity state and prolonged upright position. Infertility in these cases is commonly unexplained due to certain difficulty in diagnosing the pelvic varices in their early stages of occurrence.

Clinically most of the patients are in the reproductive age group; they may be completely asymptomatic, present with non-specific chronic pelvic pain in 15-20%, or present with the “pelvic congestion syndrome”, characterized by symptoms of
congestive dysmenorrhea, dyspareunia or urinary complaints [7].

Imaging appearance by ultrasound, CT and MRI all have been used to diagnose pelvic varices non-invasively. The gold standard has been venography, but is now ultrasound.

The pelvic varices may be seen in ultrasound scanning as long, tubular, hypoechoic tortuous structures in the adnexae.

These may extend laterally in the broad ligament up to the pelvic side wall and inferiorly into the paravaginal venous plexus. If thrombosed, echogenic material may be seen within these tortuous structures. On color Doppler imaging, these varices completely fill with color.

The treatment options available are transcatheter embolization involving venous embolization or ovarian vein excision and/or sclerotherapy of the involved veins after control of the intrapelvic reflux. Intrauterine insemination and IVF were also used recently [8].

To the best of our knowledge, investigations and research studies done to declare the role of pelvic varices in cases of unexplained infertility and the effect of their management in the restoration of infertility were not considered enough or sufficient to confirm such association. Accordingly, more studies may be needed for that purpose.

This study was done to declare the relation of the pelvic varices to infertility and to determine the effect of the suggested surgical treatment in managing unexplained infertility.

Subjects and Methods

Fifty cases of unexplained infertility managed in our departments were selected randomly among some other cases of female infertility for this study. In addition, 25 fertile women attending for diagnosing none fertile conditions as pelvic pains and dysfunctional uterine bleeding were also included as controls for comparison. Cases were managed in a year, from 2008 to 2009, at Kasr El Aini School of Medicine, Cairo University, Egypt and El Sabeen Teaching Hospital, Faculty of Medicine, Sana’a University, Yemen. The studied cases as well as the controls have a mean age of 27.5±3.2 years old and were married for 3.2±2.1. The unexplained infertility cases included 18 cases of secondary infertility and 32 cases of primary infertility. Meanwhile, the controls were 8 multigravidae and 17 nulligravidae. The steps of diagnosis done for these cases included:

- Reassessment of all the previously done investigations.
- Ultrasonographic reassessment of the cases in different positions including the dorsal, Trendelenburg and anti-trendelenburg positions to diagnose broad ligament varicosities and Doppler studies in some cases.
- Laparoscopic reassessment of the pelvis in the previous positions.
- Abdominal and pelvic exploration with ovarian and omental biopsy in suspected cases of tuberculosis, some cases of ovarian hypoplasia and luteinised unruptured follicles. The abdominal and pelvic exploration of the state of the mentioned veins were specially included in this study to draw the attention towards the unintended missing of their clinical investigations in diagnosing these cases.

Broad ligament and ovarian varicosities (female varicocele) were commonly diagnosed by ultrasonography in the standing or sitting position. The dorsal and/or the Trendelenburg positions were known to let the varicose veins collapse and their diagnosis to be difficult to establish. Doppler scanning of the broad ligament vascularity was commonly diagnostic. But exploration of the broad ligament during laparotomy and after raising the head of the patient usually gives the definite diagnosis.

Cases having female varicocele of the moderate or marked degrees needed surgical management. The latter included ligation of 2/3 of the broad ligament varicosed veins and one of the main veins draining the broad ligament in the presence of a plexus or more than one vein. In the same way, ligation of one of the main ovarian veins in the presence of more than one ovarian vein was also needed.

Cases were followed for evaluation every 3 months for one year for the occurrence of pregnancy.

The Z score was used for evaluation of the percentages. All parts of the research design including the subjects and methods, in addition to the results were revised and approved by the Institutional Review Board (IRB). A Written approval was obtained from each patient after explaining the investigations that will be done and the type and the steps of the operation and the other available operations.
Results

All the routine investigations done to diagnose infertility in the studied cases were found to be negative and the diagnosis of unexplained infertility was given. These investigations included, beside the clinical findings, semen analysis, hysterosalpingography, endometrial biopsy and primary exploratory laparoscopy. Meanwhile, the directed procedures selected for diagnosing unexplained infertility could diagnose pelvic varices in 27 (54%) of cases, utero-tubal ostetial defects in 5 (10%), luteinized unruptured follicles in 3 (6%), immunological defects in 2 (4%), anti-phospholipid syndrome in 1 (2%) and undetermined cause in 12 (24%). In addition, 3 cases of pelvic varices of the first or minor degree and a case of defective immunity were also recorded among the control cases (Table 1). Pelvic varices in the studied cases were of the second degree or moderate in 17 cases and third degree or marked in 10 cases. These degrees were determined by determining the degree of involvement of the broad ligament or its distension (Figs. 1, 2). Involvement of one third of the broad ligament is considered first degree, involvement of two thirds is secondary degree and so on. Pelvic varices were suspected by the past and/or family history of varices and the association of other pelvic and/or genital and/or lower limb varices. The difficulty in diagnosing such condition was related to the need for certain position to allow distension of the variced veins and its clinical and/or operative detection also. The authors’ recommendation for operative management of the pelvic varices was found to be much simpler than other described operations and it needed about 30 minutes for completion of the recommended technique (Figs. 3, 4). No operative or postoperative complications or side effects were recorded in any of the done operations. Results of the operation (Table 2) showed the occurrence of pregnancy in 6 (35.3%) cases of the secondary degree or moderate female varicocele. One of them ended in abortion at the tenth week of pregnancy while the other 5 completed the pregnancy to full term and delivered 5 normal newborns. Another 4 (40%) cases of the third degree or the marked female varicocele became pregnant. One of the latter cases ended in abortion at the 12th week of pregnancy and the other 3 cases completed the pregnancy to full term and delivered 3 normal newborns.
Female varicocele or broad ligament varicosities should be considered a significant cause of unexplained infertility and its diagnosis should be confirmed or excluded in these conditions. In addition, surgical management should be considered in diagnosed second and third degrees of female varicoceles.


