Tubal Abnormalities in Thai Infertile Females

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Objective: *To determine the prevalence of tubal abnormalities among infertile patients attending the clinic at Srinagarind Hospital.*
Design: *A descriptive study*
Setting: *Infertility clinic, Srinagarind Hospital, Faculty of Medicine, Khon Kaen University, Thailand.*
Subject: *A total of 740 female patients presented at the infertility clinic, Srinagarind Hospital between 1 January 1998 and 31 December 2002.*
Material and Method: *A retrospective review of demographic data, baseline infertility information and the results of tubal assesments (including both hysterosalpingography and laparoscopy) were conducted.*
Main outcome measure: *Prevalence of tubal abnormalities in infertile females being treated in the infertility clinic during the study period.*
Results: *Among the 740 patients being recruited to the present study, 533 cases (72.03%) were diagnosed with primary infertility while the rest (207 or 27.97%) came to the clinic due to secondary infertility. The mean infertile period of all study subjects was 4.68 years. Regarding the methods used for tubal assessments, hysterosalpingography (HSG), laparoscopy and combination of the two methods were conducted in 556 cases (75.14%), 30 cases (4.05%) and 154 cases (20.81%), respectively. The prevalence of tubal abnormalities demonstrated in the present study was 27.30% (202 from 740 cases). Among the 202 patients with tubal abnormalities, the pathologies detected were cornual occlusion (46.04%), combined tubal abnormalities (30.20%), distal tubal occlusion (8.42%), hydrosalpinx (3.47%), peritubal adhesion (3.96%), and other abnormalities (7.91%). Other pelvic pathologies detected from laparoscopy were endometriosis (61.49%), pelvic adhesion (24.22%), leiomyoma (12.42%), and ovarian cyst (1.87%).*
Conclusion: *Tubal abnormalities were detected in over one-fourth of all infertile females being treated at Srinagarind Hospital. Further study investigating the etiologies of these abnormalities is needed since it could be the measure to bring down the occurrence of such conditions.*

Keywords: *Infertility, Uterine tube*

J Med Assoc Thai 2005; 88(6): 723-7
Full text. e-Journal: *http://www.medassocthai.org/journal*

Infertility is a common reproductive health problem. It is estimated that 1 in every 7-9 couples will experience difficulties in getting pregnant[1]. At Srinagarind Hospital, there are approximately 200 couples seeking infertility treatment annually. One of the main causes of infertility is tubal obstruction. The prevalence of this type of infertility varied greatly in different countries in which it was studied. In developed countries, tubal obstruction was found in 36% of infertile women; however, in Asia this percentage reached 39%, in Latin America 44%, and in Africa 85%[2]. Several factors have been claimed to be associated with the occurrence of tubal infertility. These include sexually transmitted diseases, multiple sexual partners, early age at first sexual intercourse, race, socioeconomic and marital status, previous use of contraceptive methods, septic abortion, and abdominal or pelvic surgery[3,4]. These factors obviously varied from one culture to anothers and hence it is interesting to determine the prevalence of tubal abnormalities among Thai infertile females since it may differ from those previously reported in the literature.

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Material and Method

The authors conducted a retrospective review of all infertile females who attended the clinic at Srinagarind Hospital, the only fully equipped infertility center in Northeastern Thailand, from 1 January 1998 to 31 December 2002. The demographic data, baseline infertility information, laboratory results and the results of tubal assessments using both laparoscopy and hysterosalpingography (HSG) were recorded and analysed. Only patients with full details of infertility data as well as tubal assessment results were recruited to the present study. This study was approved by the ethical committee of Faculty of Medicine, Khon Kaen university.

Results

During the study period, 1090 infertile females attended the clinic at Srinagarind Hospital. A total of 740 cases were recruited into the present study since the rest of the patients (350 cases or 32.11%) did not meet the inclusion criteria (infertility data was insufficient or no tubal assessment results). Among the 740 subjects being studied, primary and secondary infertility were diagnosed in 533 cases (72.03%) and 207 cases (27.97%), respectively.

The present study demonstrated that the mean age of the study subjects was 29.76 $\pm$ 4.72 years, the mean marital period was 5.43 $\pm$ 3.82 years and the mean duration of infertility was 4.68 $\pm$ 2.54 years. The majority of the patients (731 cases or 98.78%) lived in the Northeast region of Thailand. Most of the patients were farmers (34.06%) and governmental officers (27.97%). The majority of the patients (67.16%) had education below the university level (Table 1).

Among the study subjects, there were only 89 cases (12.03%) using contraception prior to being treated at our infertility clinic. The most common contraceptive method used was oral contraceptive (72.9%). The mean duration of contraceptive use among these 89 cases was 2.53 $\pm$ 1.37 years.

The present study revealed that among all study subjects, 78 cases presented with past gynecologic problems. These included endometriosis (29.48%), ectopic pregnancies (19.23%), abnormal uterine bleeding (16.67%), pelvic inflammatory diseases (15.38%), STD (2.56%) and others (such as myoma uteri, ovarian cyst, etc.; 16.67%). There were 38 patients (5.14%) who had a history of pelvic or lower abdominal surgeries prior to recruitment into the present study. The majorities of these surgeries were salpingectomy (31.58%), ovarian cystectomy (23.68%), appendectomy (13.15%), myomectomy (10.53%) and cesarean section (21.06%). Among the 207 patients diagnosed with secondary infertility, 36 cases (17.39%) had a history of illegal induced abortion.

There were three methods being used to assess tubal status in the present study. These include hysterosalpingography (performed in 556 cases or 75.14%), laparoscopy (performed in 30 cases or 4.05%), and combination of the two methods (performed in 154 cases or 20.81%). The prevalence of tubal abnormalities demonstrated in the present study was 27.30% (202 from 740 cases). Among these 202 cases, the most common tubal abnormality detected was cornual occlusion (46.04%). Other tubal abnormalities demonstrated in the present study were distal tubal occlusion, hydrosalpinx, peritubal adhesion, combined tubal abnormalities and others as shown in Table 2.

Table 1. Demographic data of the patients

Information	Number of patients (%) n = 740
Living location	
Khon Kaen province	256 (34.59%)
Other provinces in NE region	475 (64.19%)
Outside NE region	9 (1.22%)
Education	
Primary school	326 (44.05%)
Secondary school	111 (15.00%)
Junior college	60 (8.11%)
University (Bachelor degree)	230 (31.08%)
Master degree/PhD	13 (1.76%)
Occupation	
Farmers	252 (34.06%)
Government officers	207 (27.97%)
Labourers	81 (10.95%)
Traders	78 (10.54%)
Housewives	37 (5.00%)
Others	85 (11.48%)

Table 2. Types of tubal abnormalities detected

Types of tubal abnormalities	Number of patients (%) n = 202
Cornual occlusion	93 (46.04%)
Distal tubal occlusion	17 (8.42%)
Hydrosalpinx	16 (7.91%)
Peritubal adhesion	7 (3.47%)
Others	8 (3.96%)
Combined tubal abnormalities	61 (30.20%)
Total	202 (100.00%)

Table 3. Extra-tubal pelvic pathologies detected by laparoscopy

Types of pathologies detected	Number of patients (%) n = 161
Endometriosis	99 (61.49%)
Pelvic adhesion	39 (24.22%)
Myoma uteri	20 (12.42%)
Ovarian cyst	3 (1.87%)
Total	161 (100.00%)

Among the 184 patients who had laparoscopy performed, extra-tubal pelvic pathologies were detected in 161 cases (87.50%). The most common abnormality detected laparoscopically was endometriosis (61.49%). Other extra-tubal abnormalities observed were pelvic adhesion, myoma uteri, and ovarian cyst as shown in Table 3.

Discussion

Couples may present to their physicians complaining of infertility after failing to conceive for months or years. Tubal damage is a common cause of infertility, and laparospcopy or hysterosalpingography are accepted methods for diagnosing this condition[5]. The prevalence of tubal infertility varies greatly from one area to another[6,7]. The present study demonstrated that the prevalence of tubal abnormalities among infertile females who attended the clinic at Srinagarind Hospital was 27.30%. This figure was comparable to 29.7% prevalence previously reported from Ramathibodi Hospital in Bangkok, Thailand[6]. This prevalence, however, was relatively lower than that reported by Cates et al which revealed that, during the 1980s, the prevalence of tubal obstruction among infertile patients was 36% in developed countries, 39% in Asia, 44% in Latin America, and 85% in Africa[2]. The discrepancy between the prevalence reported by Cates and that of the present study could partly be explained by the fact that these two studies were conducted in different time frames. The studies by Cates et al analysed the patients seeking infertility treatment during the 1980s, about one decade earlier than the time period being investigated in the present study. This time-frame difference, therefore, could result in alterations in several factors attributed to the occurrence of tubal abnormalities and hence the difference in its prevalence. Genital *Chlamydial trachomatis* infection has a worldwide distribution[8] and is now recognised as the single most common cause of tubal peritoneal damage[9,10]. As personal recognition regarding genital hygiene has been improved over time, it thus seems justified to foresee the decreasing trend of tubal infertility as time passes.

Several factors have been claimed to increase the risk of tubal infertility. These include repeated episode of salpingitis[7,11], sexually transmitted diseases, multiple sexual partners, early age at sexual intercourse, race, socio-economic and marital status, and abdominal or pelvic surgeries[3,4]. The present study revealed that 10.54% of the study subjects (78 from 740 cases) presented with risk factors of tubal infertility prior to recruitment into the present study. Further analysis (data not shown) indicated that there was no difference in the distribution of these risk factors between the patients with normal fallopian tubes and those with tubal abnormalities. The descriptive nature of the present study, however, precludes the possibility to evaluate the association between these factors and the occurrence of tubal abnormalities. Further study using a case control design, thus, is required to overcome the limitations of the present study.

Another limitation of the present study that should be acknowledged is that the subjects recruited consisted of about 67.89% of the total patients being treated in our center during the study period and hence about 32.11% of the data in the target population was not included for analysis. There is, thus, a possibility that information presented in these missing subjects could differ from those acquired in the study subjects and hence the validity of the present study could possibly be compromized. A larger scale prospective study is recommeded to solve this problem but the expense and time required to conduct such a study may reduce its interest.

Three methods have been used in the present study as the measures to assess tubal status. These include hysterosalpingography (HSG), laparoscopy and the combination of both methods. Several studies demonstrated that HSG is a good screening test for tubal occlusion although it has some limitations in evaluating extra-luminal pathology such as pelvic adhesion distant from the fallopian tubes or pelvic endometriosis[5]. The advantage of laparoscopy presented in the present study is that this method provides the physician the opportunity to thoroughly evaluate tubal status as well as other pelvic structures. The data from the present study revealed a high prevalence (87.50%) of extra-tubal pelvic pathologies. Endometriosis was the disease most commonly detected by laparoscopy (61.49% of cases underwent

laparoscopic procedures). Other conditions such as pelvic adhesions and myoma uteri were found in more than one-third of the cases. These pathologies, to some extent, can attribute to the reduction in fertility potentials of the patients and hence proper management after correct diagnosis being established is needed to improve the prognosis of such cases. Based on the results of the present study, the authors, therefore propose that laparoscopy should be considered as part of female infertility investigation since it is helpful in revealing extra-tubal pathologies that seem to occur quite commonly in such patients.

The most common type of tubal abnormalities demonstrated in the present study was cornual occlusion (46.04%). Several factors were proposed as the causes of cornual occlusion. These include salpingitis isthmica nodusa, pelvic inflammatory disease, pelvic tuberculosis, endometrial polyp and submucous fibriod[12]. Cornual occlusion due to infection is often associated with microscopic damage along the length of the tube and so there is a poor prognosis for tubal surgery in such cases. In vitro fertilisation (IVF) is usually the treatment of choice for these patients who present with moderate to severe tubal damage. Although IVF has proved to be reasonably successful in patients suffering from tubal pathologies being treated in most infertility centres, it consists of several stressful treatment steps and the cost is exceptionally high. It, thus, seems justified to advocate prevention measure against tubal diseases in order to minimise the chance of experiencing tubal infertility. Providing health information to reproductive-aged women regarding factors attributed to tubal damage could be one of these measures.

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ความผิดปกติของท่อนำไข่ในสตรีไทยที่มีบุตรยาก

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วัตถุประสงค์: *เพื่อศึกษาความชุกของความผิดปกติที่ท่อนำไข่ในสตรีที่มีบุตรยากที่มารับการรักษาในโรงพยาบาลศรีนครินทร์*

รูปแบบการทำวิจัย: *การวิจัยเชิงพรรณนา*

สถานที่ทำวิจัย: *คลินิกมีบุตรยากโรงพยาบาลศรีนครินทร์ คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น*

กลุ่มตัวอย่าง: *สตรีมีบุตรยากจำนวน 740 ราย ที่ได้รับการดูแลรักษาที่คลินิกมีบุตรยาก โรงพยาบาลศรีนครินทร์ ระหว่างวันที่ 1 มกราคม พ.ศ. 2541 ถึง 31 ธันวาคม พ.ศ. 2545*

ตัววัดที่สำคัญ: *ความชุกของความผิดปกติที่ท่อนำไข่*

ผลการวิจัย: *ในจำนวนผู้ป่วย 740 รายที่ทำการศึกษา มีผู้ป่วย 533 ราย (ร้อยละ 72.03) ที่ได้รับการวินิจฉัยว่ามีภาวะมีบุตรยากแบบปฐมภูมิ ในขณะที่ผู้ป่วยส่วนที่เหลือจำนวน 207 ราย (ร้อยละ 27.97) มีภาวะมีบุตรยากแบบทุติยภูมิ ระยะเวลาเฉลี่ยที่ผู้ป่วยเผชิญภาวะมีบุตรยากคือ 4.68 ปี วิธีการที่ใช้ตรวจประเมินท่อนำไข่ในการศึกษานี้ได้แก่ การตรวจด้วยวิธีฉีดสีเข้าโพรงมดลูก (ทำในผู้ป่วย 556 ราย หรือร้อยละ 75.14) การผ่าตัดส่องกล้องสำรวจช่องท้อง (ทำในผู้ป่วย 30 ราย หรือ ร้อยละ 4.05) หรือใช้วิธีการทั้งสองอย่างร่วมกัน (ทำในผู้ป่วย 154 ราย หรือร้อยละ 20.81) การศึกษานี้พบว่าในผู้ป่วยที่ถูกเลือกเข้าทำการศึกษามีความชุกของความผิดปกติที่ท่อนำไข่เท่ากับร้อยละ 27.30 (202 จาก 740 ราย) ซึ่งชนิดของความผิดปกติที่ท่อนำไข่ที่ตรวจพบ คือ ท่อนำไข่ส่วนต้นอุดตัน (ร้อยละ 46.04) ท่อนำไข่มีพยาธิสภาพหลายตำแหน่ง (ร้อยละ 30.20) ท่อนำไข่ส่วนปลายอุดตัน (ร้อยละ 8.42) ท่อนำไข่บวมน้ำ (ร้อยละ 3.47) ภาวะพังผืดรอบท่อนำไข่ (ร้อยละ 3.96) และความผิดปกติอื่น ๆ (ร้อยละ 7.91) สำหรับพยาธิสภาพร่วมในอุ้งเชิงกรานที่พบจากการส่องกล้องสำรวจช่องท้องได้แก่ เยื่อบุโพรงมดลูกเจริญผิดที่ (ร้อยละ 61.49) พังผืดในอุ้งเชิงกราน (ร้อยละ 24.22) เนื้องอกกล้ามเนื้อมดลูก (ร้อยละ 12.42) และถุงน้ำรังไข่ (ร้อยละ 1.87)*

สรุป: *ความผิดปกติที่ท่อนำไข่เป็นภาวะที่พบได้ถึง 1 ใน 4 ของสตรีที่มีภาวะมีบุตรยากที่มารับการรักษาที่โรงพยาบาลศรีนครินทร์ การศึกษาเพิ่มเติมเพื่อสืบค้นถึงสาเหตุของพยาธิสภาพเหล่านี้จะมีประโยชน์ในการป้องกันความผิดปกติที่ท่อนำไข่อันเป็นสาเหตุของภาวะมีบุตรยาก*