RISK FACTORS FOR ABNORMAL TUBAL HYSTEROSALPINGOGRAPHIC FINDINGS IN WOMEN PRESENTING WITH INFERTILITY IN JOS

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ABSTRACT

Background: *Acquired structural abnormalities of the female reproductive tract contributes to the aetiology of female infertility. So many presumed risk factors for female tubal infertility are seen among Nigerian women. However, reports on the relationship between these factors and tubal pathology as seen on hysterosalpingography in our environment is limited.*

Methods*: Three hundred and fifty subfertile women seen at the infertility clinic and sent for hysterosalpingography at the Fluoroscopy unit of department of Radiology, Jos University Teaching Hospital had their Hysterosalpingograms evaluated for tubal pathology.*

Results:

About 63.1.% of women with prior multiple sexual partners had increased tubal abnormalities compared to those with single partners(45.6%).(p=0.007).A significant proportion(89.9%) of women with history of previous pelvic infection and 63.9% those who got married after 30 years show abnormal tubes(p<0.005 and p=0.022 respectively).Also, those with history of pelvic surgeries had more tubal lesions.

Conclusion: *The risk factors for structural tubal abnormalities are preventable. Thus, prevention strategies such as health awareness campaigns against unwanted pregnancy, promotion of responsible sexual behaviour with establishment of youth friendly family clinics is advocated.*

INTRODUCTION

Parenthood is undeniably one of the most universally desired goals in adulthood, and most people have life plans that include children. However, not all couples who desire a pregnancy will achieve one spontaneously due to some socio-demographic risk factors.

Infertility is the inability of a sexually active, non-contracepting couple to achieve pregnancy in one year.[1]

Structural disorders of the female reproductive tract accounts for approximately 20-35% of subfertility, for which imaging plays a crucial role**.**Tubal infertility is a significant contributor to subfertility in the Western medical literature and tubal lesions are the commonest pathology seen on hysterosalpingography(HSG) in sub Saharan Africa.[2,3,4,5]

The aetiology of infertility varies from region to region.However, a signifcant proportion of people suffer infertility related to preventable conditions such as sexually transmitted infections, poor reproductive health behaviour, iatrogenic health care practices and medical neglect of precursor conditions.[6,7]

Pelvic inflammatory disease(PID) is recognized to be a major cause of dysfunction or occlusion of the fallopian tubes. However, more than half of women diagnosed with infertility due to tubal dysfunction, occlusion ,or both do not report a history of PID.[8]It is a leading cause of tubal scarring and eventual occlusion abnormality in subSaharan Africa**.** It is

estimated that PID – related tubal adhesions causes 30 – 50 % of all cases of female infertility.Tubal infertility occurs in approximately 11% of women who have one episode, in 23% of women who have two episodes, and in 54% of women who have three or more episodes of salpingitis.[9,10]

The risk factors for pelvic infections may include among others:young age, sexual promiscuity, low socioeconomic status, frequent douching, the presence of an intrauterine device, as well as other pelvic instrumentation.[11]

Various imaging modalities are commonly employed in the workup of tubal infertility.

Hysterosalpingography (HSG) is a vital most effective and less invasive imaging modality in the evaluation of the fallopian tubes especially in resource limited settings such as ours. It may detect disorders of the fallopian tubes and also suggest other disorders of the female reproductive system. Other than being diagnostic, it has proved to be therapeutic also.[12,13,14]

The goal of this study is to check the tubal abnormalities of women with infertility as seen on HSG in Jos and correlate it with some com

MATERIALS AND METHODS

This was a hospital based cross-sectional study of Hysterosalpingograms of 350 consecutive consenting subfertile women carried out at the Fluoroscopy unit of the department of Radiology, Jos University Teaching Hospital, Jos. The HSG was performed by the radiologist during the early proliferative phase of the menstrual cycle. Biodata , other relevant information and HSG findings were analyzed using statistical package for social sciences(SPSS Incorporated Chicago version 20.0)statistical software.

Test for association using Chi-square test was done where appropriate between various tubal findings and socio-demographic risk factors. The level of significance was set at $p<0.05$.

The study was undertaken after due approval from the Research and Ethics committee of the Jos University Teaching Hospital(JUTH).

RESULTS

Three hundred and fifty (350) women were studied with a mean age of 32.31 years (range between 18 to 46 years). The frequency peaked in the age group 25-29 years (32.6 %) while only 3 patients each were seen in the extreme of ages 15-19years and 45-49years constituting 0.9% respectively. A sizeable proportion of women were from a monogamous family setting constituting 277(79.1%). Over half of the patients had tertiary education(52.9 %) and about 40% were civil servants.

The mean duration of infertility was 4.4 years (range 1-20 years) with 68.3% of the women in the category of the 1-4 years.(Table 1)

The mean age at the time of first sexual exposure of the study population was 20.19 years. The youngest age of initiation of sex was 11 years, though majority (68.6%) of respondents initiated sex above the age of 18 years. About 52(47.3%) women out of the total of 109 who were exposed sexually before age of 18years had abnormal tubal findings while 127(52.7%)women out of the 241 patients exposed sexual after 18 years of age had tubal lesions. This was not statistically significant ($p=0.454$).

Two hundred and thirty nine (68.3%) women had only one sexual partner while 111(31.7%) women had prior multiple sexual partners constituting 109(45.6%) and 70(63.1%) women with abnormal tubal findings respectively. This was statistically significant($p=0.007$).

One hundred and thirty eight women (39.9%) gave clinical history suggestive of previous pelvic infection, 124(89.9%) of the women had abnormal tubal lesions while 24(10.1%) patients had normal tubes. This was statistically significant($p<0.05$)

One hundred and thirty three (47.8%) women and 46 (63.9%) women who got married before and after 30 years of age had abnormal tubes respectively. This was statistically significant($p=0.022$)

A hundred and nine (71.7%) and 111(56.1%) women with and without clinical history dilatation and curettage had abnormal tubes respectively.($p=0.003$).

There was an association between a positive history of pelvic surgery and abnormal fallopian tube.($p=0.007$)

Table 1: Socio-Demographic characteristics of Respondents(n=360)

Variables	Frequency	Percent
AGE (years)		
15 - 19	3	0.9
20 - 24	36	10.3
25 - 29	114	32.6
30 - 34	96	27.4
35 - 39	70	20.0
40 - 44	28	8.0
45 - 49	3	0.9
EDUCATION		
None	7	2.0
Primary	33	9.4
Secondary	125	35.7
Tertiary	185	52.9
OCCUPATION		
Civil servant	140	40.0
Housewife	95	27.1
Self-employed	97	27.7
Student	18	5.1
ETHNICITY		
Berom	43	12.3
Hausa/Fulani	27	7.7
Igbo	56	16.0
Yoruba	41	11.7
Others	183	52.3
DURATION OF INFERTILITY (years)		
1 - 4	239	68.3
5-8	68	19.4
9-12	34	9.7
13-16	7	2.0
17 - 20	2	0.6

Table 2: The Association between presumptive risk factors and Abnormal tuboperitoneal findings on HSG

Risk factors	Tubal findings		Total (%)	X^2	P value
	Normal Freq(%)	Abnormal Freq(%)			
Multiple Prior Sex Partners					
1	130(54.4)	109(45.6)	239(100.0)	**9.791**	**0.007**
2-3	32(39.0)	50(61.0)	82(100.0)		
>3	9(31.0)	20(69.0)	29(100.0)		
History Of Pelvic Infection					
Yes	14(10.1)	124(89.9)	138(100.0)	**71.128**	**0.001**
No	116(54.7)	96(45.3)	212(100.0)		
Age At First Sexual Exposure					
<18 Years	57(52.3)	52(47.3)	109(100.0)	**0.748**	**0.454**
>18years	114(47.3)	127(52.7)	241(100.0)		
Delayed Age At Marriage					
<30 Years	145(52.2)	133(47.8)	278(100.0)	**5.269**	**0.022**
>30years	26(36.1)	46(63.9)	72(100.0)		
IUCD					
Yes	4(57.1)	3(42.9)	7(100.0)	**0.196**	**0.658**
No	167(48.7)	176(51.3)	343(100.0)		
History Of Pelvic Sugery					
Yes	70(41.4)	99(58.6)	169(100.0)	**7.234**	**0.007**
No	101(55.8)	80(44.2)	181(100.0)		
Polygamy					
Yes	36(49.3)	37(50.7)	73(100.0)	**0.008**	**0.093**
No	135(48.7)	142(51.3)	277(100.0)		
Dilatation & Curettage					
Yes	43(28.3)	109(71.7)	152(100.0)	**9.021**	**0.003**
No	87(43.9)	111(56.1)	198(100.0)		

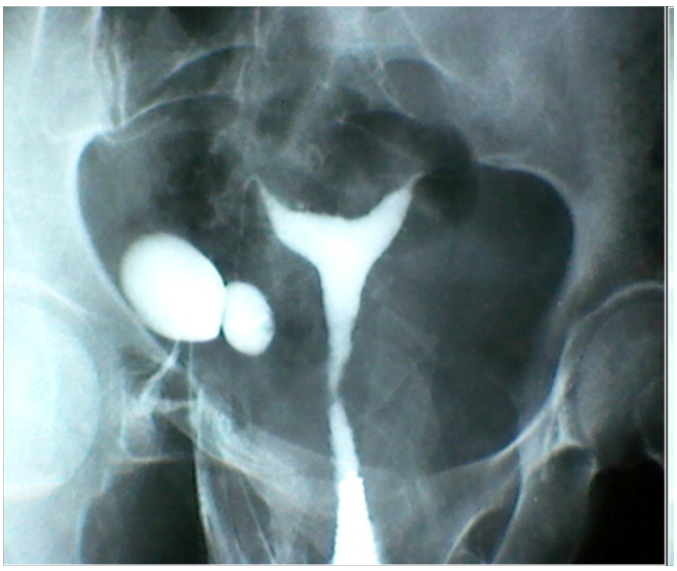

Fig 1:HSG showing normal uterine contours, left isthmic occlusion (black arrow) and dilated contrast loculated right tube indicative of hydrosalpinx (white arrow head) with no spill of contrast.

DISCUSSION

Children are regarded as the fabric of the society in Africa, without which no meaningful social and economic progress is considered worthwhile. Infertility is regarded as a social stigma and constitutes a public health problem hence the need for adequate information on socio-demographic risks factors of infertility with a view of preventing it.

The patients mean age in the study was 32.31 years, with majority (60.0%) of the patients in 25-34years age group. This coincides with the active reproductive age group. Similar findings of 66.0% and 74.8% were recorded by researchers in Kampala and Abakaliki.[15.16]

It is widely acknowledged that age at marriage has a significant influence on fertility, particularly in countries where childbearing occurs within marriage. This study shows that A significant number (79.4 %) of patients were married before 30 years of age. One could infer that delayed marriage is not yet a problem in our environment. However, about 64.0% of the women that got married after 30 years of age had abnormal tubes. This was statistically significant(p=0.022). Researchers have documented compelling evidence of declining fertility with advanced age at marriage which may be due decreased ovarian volume and high chances of tubal infertility with advancing age.[17]

Pelvic Infection is a common cause of tubal infertility in our environment. Widely reported predisposing factors include; multiple sexual partners, post-abortal and puerperal sepsis, early sexual debut, and polygamy.[8,9,10]

Early initiation of sexual intercourse may be associated with increased likelihood of engaging in riskier sexual behaviours resulting in increased risk of STIs, unwanted pregnancies and subsequently abortions.[18]Structural abnormalities of female reproductive system follow exposure to some of these risk factors.

Women who had prior multiple sexual partners, and those with a clinical history of dilatation and curettage had more tubal abnormalities. These were statistically significant (p=0.007 and 0.003 respectively).These factors may increase the chances of acquiring genital infections which may cause tubal lesions as sub clinical PID may go unnoticed while induced abortions are mostly performed clandestinely by untrained personnel which often results in complications such as post abortal sepsis which may lead to tubal damage.[19.20]

Pelvic inflammatory disease was also a significant risk factor for tubal infertility in this study. (p=0.001).Similar findings were recorded by other researchers.[21.22]

Pelvic surgery can sometimes cause damage and scarring to the fallopian tubes. There is a significant association between previous history of pelvic surgery and the occurrence of tubal pathology in the population studied as almost 60% of the women that had pelvic surgeries had tubal abnormalities. The commonest surgical procedure among these women was dilation and curettage either for termination of pregnancy or as part of treatment for spontaneous abortion. Similar finding was documented by Verhoeve etal.[23]

The type of family of respondents and history of IUCD use and age at time of first sexual exposure has no significant relation with tubal findings in this study (P=0.093,0.658 and 0.454 respectively).

Other risk factors such as smoking, alcohol and obesity were not evaluated as these are not yet a problem in this environment.

CONCLUSION

Socio-demographic risk factors associated with tubal infertility are preventable. Early identification and strategies for their prevention must be in place to guide against unwanted pregnancies, and pelvic inflammatory disease. Establishment of youth friendly family clinics toward increasing the knowledge of the youth about contraception and promotion of reproductive sexual behaviour among ablescents.

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