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Original Article

Comparison of age related changes between right and left sided fimbriae of fallopian tubes in Bangladeshi Female

Farhana Akter[1], Mohammed Asaduzzaman Khan[2], Mushfika Rahman[3], Khushruba Rahman Khan[4], Bidita Mitra[5], Humaira Naushaba[6]

[1]Assistant Professor, Department of Anatomy, Dhaka National Medical College, Dhaka, [2]Registrar, Department of Medicine, Dhaka National Medical College, Dhaka, [3]Associate Professor, Dr. Sirajul Islam Medical College, Dhaka, [4]Assistant Professor, Department of Anatomy, Dhaka National Medical College, Dhaka, [5]Senior Lecturer, Community Medicine, Dhaka National Medical College, Dhaka, [6]Head, Department of Anatomy, Dhaka Medical College, Dhaka

Abstract:

Background: The fallopian tube is the temporary but initial bed for the fertilized embryo. It convey the ova from the ovaries, transmit spermatozoa and provides the appropriate environment for fertilization and transports the developing embryo to the uterus. Tubal pregnancy, tuberculosis, inflammation, tumor are the common pathology of the fallopian tubes. Complete or partial bilateral tubal block or adhesions may develop from clinical conditions which lead to infertility.

Objective: To Compare age related changes between right and left sided fimbriae of fallopian tube in Bangladeshi female.

Methods: This is a cross sectional, descriptive type of study which was carried out in the Department of Anatomy, Sir Salimullah Medical College (SSMC), Dhaka from Jan 2011 to Dec 2011. The number of sample was sixty two pairs of cadaveric human fallopian tubes which were collected from unclaimed dead bodies of the morgue of Dhaka Medical College. Among the studied samples, the lowest age was 2 years and the highest age was 65 years. The samples were divided into four different age groups. They were group A or prepubertal group (2-12years), group B or reproductive group (13-45 years), group C or perimenopausal group (46-51years) and post menopausal group (52-65 years).

Results: The highest mean (SD) number of fimbriae of the fallopian tubes were found in reproductive age (group B), where as the lowest number of fimbriae of the fallopian tubes were found in post menopausal age (group D).

Key words: Fallopian tube, fimbriae, ageing, Embryo, Uterus.

Introduction:

The words fallopian tubes comes from the Greek word salpinx, which means a trumpet or a tube. Fallopian tubes are paired muscular canals that derived from cephalic portion of the mullerian ducts.[1] It is about 10-12cm long situated in the edge of the mesosalpinx which is the upper free margin of the broad ligament of the uterus.[2] The tube passes laterally and superiorly and consists of four main parts intramural, isthmus, ampulla and trumpet shaped infundibulum. Numerous mucosal finger like folds, 1mm wide called fimbria, are attached to the end of the infundibulum.[3] One of the fimbriae is longer and more deeply grooved than the others and is tipically applied to the tubal pole of the ovary. Margin of the infundibulum have 20-30 fimbriae.[4] Tubes consist of an external serosa, intermediate muscular layer and inner mucosal layer. Fallopian tube is the temporary but the initial bed for the fertilized ova. The tube accommodates the developing embryo and nourishes it with nutrition during the first week of life before implantation. The extra uterine implantation occurs mainly in the ampulla of the fallopian tube .The most common disorders in this paired structures are tuberculosis, acute and chronic salpingitis, salpingitis, benign tumors and cysts, malignant tumors. Infertility is a common sequelae of the above mentioned diseases. In assisted reproductive techniques (ART) the fallopian tubes are utilized by infertile couples to conceive. Methods of ART into the fallopian tubes are GIFT (gamete intra fallopian transfer) and ZIFT (zygote intra fallopian transfer).[5] Ligation of the fallopian tubes is a surgical method of birth control which can be either abdominal tubal ligation or laparoscopic tubal ligation. It is a permanent device for population control.[4] A clear knowledge of the anatomy of the fallopian tube is a pre requisite for the diagnosis and treatment of fallopian

tube diseases. The present study was performed to find out the number of fimbriae between right and left side and features of age related changes of fimbriae of fallopian tube.

Materials & methods:

The present study was performed on 62(sixty two) pairs of cadaveric human fallopian tube whose age ranged from 2 to 65 years. Samples were collected from unclaimed dead bodies within 12 to 36 hours of death which were autopsied on different dates in the morgue of the Department of Forensic Medicine of Dhaka Medical College (DMC), Dhaka. Approximate age & sex were noted down from the morgues record book at the time of collection of the samples. Then the samples were brought to the Department of Anatomy, Sir Salimullah Medical College, Dhaka. The study was carried out in the Department of Anatomy, Sir Salimullah Medical Dhaka from Jan 2011 to Dec 2011.The samples were divided into four age groups; group A (2-12years) or prepubertal group, group B (13-45years) or reproductive group, group C (46-51years) or perimenopausal group, group D(52-65 years) or postmenopausal group.

Table: 1 Study group distribution in different age groups[6]

Study groups	Age range (in years)	No. of samples (n =124)
Group A (prepubertal)	02-12	07x2
Group B (reproductive)	13-45	30x2
Group C (perimenopausal)	46-51	15x2
Group D (postmenopausal)	52-65	10x2

Procedures for collection and dissection of the samples from cadavers

The fallopian tubes were collected from the cadavers by the following standard postmortem techniques:

The dead body was kept on the table in supine position. A long midline incision was made extending from the middle of the jugular notch to the upper border of the symphysis pubis. Flaps of skin along with the subjacent soft tissues i.e. superficial and deep fascia along with the muscle of the front of the thoracic cage were reflected laterally. Cuts were made through the costal cartilages bilaterally and the sternum with the attached costal cartilages was removed enblock. Now the entire thoracic cavity and the entire abdominal cavity were exposed to view properly all the thoracic and abdominal viscera. Then anterior abdominal wall was retracted laterally. After pushing the intestine above, the fallopian tube were collected by block dissection along with the uterus, ovary and broad ligaments.

Samples were washed thoroughly with running tap water. Blood and blood clots were removed as far as possible. Each sample was tagged properly with identification number and age of the cadaver, and then the samples were dried with the help of blotting paper. Immediately the length and diameter was measured, then preserved and fixed in 10% formol saline solution. The formalin fixed samples were washed with the running tap water to wash out the formalin for softening of fixed tissue and to avoid irritation to eyes and nasal mucosa during dissection. Then the samples were taken in a wax tray. The samples were soaked with blotting paper. The unwanted tissues were removed carefully with the help of a scissor, fine dissecting forceps and a sharp BP blad.[7]

Estimation of the number of the fimbriae of the fallopian tube:

The number of the fimbriae were counted by using a hand magnifying glass at the distal end of the tube ie; infundibulum[7]

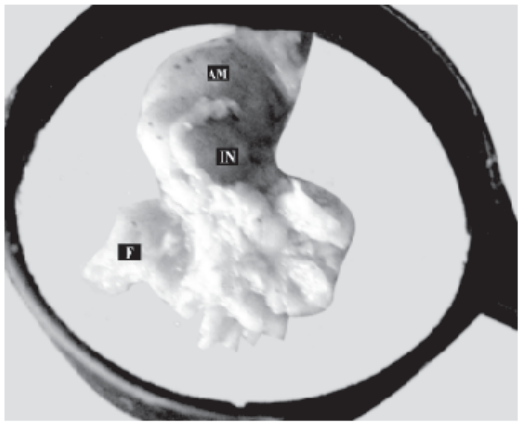

Fig 1: Photograph showing number of fimbria (F) of the fallopian tube by hand magnifying glass.[7]

Results:

Number of the fimbriae of the right and left fallopian tubes in different age groups:The mean (± SD) number of fimbriae of the right fallopian tubes were 18.86±2.61 in group A, 20.17+ 1.98 in group B, 19.33 + 1.40 in group C and 18.20+ 1.40 in group D.The mean (± SD) number of fimbriae of the left fallopian tubes were 18.71±2.56 in group A, 20.10+ 2.56 in group B, 19.27 + 1.39 in group C and 18.00+ 1.41 in group D.

When the number of fimbriae of the right and left fallopian tubes were compared no significant (P>0.10) difference were found in the fimbriae of the right and left fallopian tubes. When compared among the different age groups, the differences of mean(± SD)number of the fimbriae of the right fallopian tubes were highly significant (P<0.01) between group B vs D but not significant (P>0.10, P>0.05) between group A vs B ,group A vs C, group A vs D, group B vs C and group C vs D.

The differences of mean(± SD)number of the fimbriae of the left fallopian tubes were highly significant (P<0.01) between group B vs D but not significant (P>0.10, P>0.05) between group A vs B ,group A vs C, group A vs D, group B vs C and group C vs D.

Table 2: Number of the fimbriae of the right and left fallopian tubes in different age groups

Age group	Number of fimbriae		P value
	Right Mean±SD	Left Mean±SD	
A (n=7)	18.86±2.61 (16.00 23.00)	18.71±2.56 (16.00 23.00)	>0.10^{ns}
B (n=30)	20.17±1.98 (16.00 23.00)	20.10±2.56 (16.00 23.40)	>0.10^{ns}
C (n=15)	19.33±1.40 (16.00 21.00)	19.27±1.39 (16.00 21.00)	>0.10^{ns}
D (n=10)	18.20±1.40 (16.00 20.00)	18.00±1.41 (16.00 20.00)	>0.10^{ns}

	P value	P value
A vs B	>0.05^{ns}	>0.05^{ns}
A vs C	>0.50^{ns}	>0.50^{ns}
A vs D	>0.10^{ns}	>0.10^{ns}
B vs C	>0.10^{ns}	>0.10^{ns}
B vs D	<0.01**	<0.01**
C vs D	>0.10^{ns}	>0.05^{ns}

Figures in parentheses indicate range. Comparison between right and left side done by paired Student's 't' test and comparison between age groups done by One way ANOVA (PostHoc), ns = not significant, ** = significant.

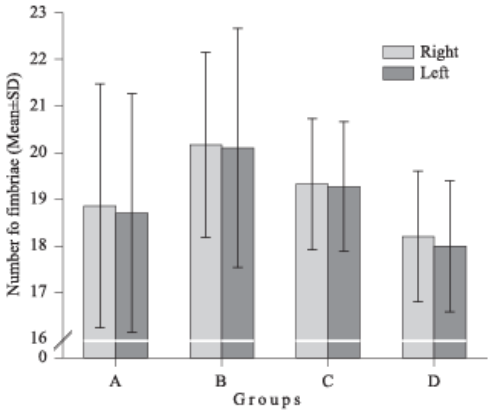

Fig. 2: Number of the fimbriae of the right and left fallopian tubes in different age groups

Group A : 6-12 years

Group B : 13-45 years

Group C : 46-51 years

Group D : 52-65 years

Discussion:

In the present study, the highest mean (SD) number of fimbriae of the fallopian tubes were found in reproductive age (group B), where as the lowest number of fimbriae of the fallopian tubes were found in post menopausal age (group D).

When compared among the different age groups, the differences of mean (SD) number of the fimbriae of the fallopian tubes ware highly significant (P<0.01) between group B vs D but not significant (P>0.01, P> 0.05) between group A vs B, group A vs C, group A vs D, group B vs C and group C vs D.

The number of the fimbriae of the present study coincides with Bardawil (2008) Hena (2008) and Moore(1999).

Conclusion:

The highest mean (SD) number of fimbriae of the fallopian tubes were found in reproductive age (group B), where as the lowest number of fimbriae of the fallopian tubes were found in post menopausal age (group D).

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