

Assessment Of The Follicles in Different Age Groups in Post Mortem Human Ovary

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Abstract

Background:

Ovary is one of the essential reproductive organs in human being. A detailed histomorphological feature of ovary is an un-debatable for diagnostic and therapeutic purpose for ovarian disease. The standardization of the morphological and histological measurements of ovary in general in Bangladeshi people is essential to increase the knowledge regarding anatomical variation in our population. So a research work on detailed anatomical parameters of ovary is an un-debatable.

Objective: To find out the follicles in different age groups post mortem human ovary. **Methodology:** The cross-sectional observational study was carried out in the Department of Anatomy, Sylhet MAG Osmani Medical College, Sylhet in collaboration with the Department of Forensic Medicine, Sylhet MAG Osmani Medical College during the period from January 2016 to December 2016. Sixty pairs of human postmortem ovaries were collected. The inclusion criteria were dead bodies autopsied within 36 hours of death. Considerable signs of decomposition or decomposed dead body, presence of gross ovarian disease and any history of poisoning cases were excluded. All the specimens were examined for morphological parameters but only 18 specimens were examined histological parameters. **Results:** The highest total numbers of the follicles were found in the age group A and lowest total numbers of the follicles were in the age group C. The differences of total numbers of the follicles were significant between group-A and group-B ($p < 0.001$); and group-A and group-C ($p < 0.001$); but no significant difference was observed between group-B and group-C ($p = 0.080$). **Conclusion:** Histomorphologically, the total number of the follicles is found maximum at reproductive years and is declined through perimenopause and postmenopause.

Key word: Histomorphological variations, follicles, post mortem human ovary

Introduction: Human ovarian tissue cryopreservation is a fertility preservation technique that has been performed for many years, gradually shifting from an experimental to a clinically implemented fertility preservation approach.¹

The ovary has important gametogenic functions that are integrated with its hormonal activity. Ovarian pathology can manifest in various ways e.g. menstrual abnormality, cystic disease, infertility, benign or malignant tumours etc. Exact knowledge of the normal the ovary, may facilitate the gynaecologists,

endocrinologists, pathologists and radiologists to adopt appropriate diagnosis and treatment of various clinical conditions associated of the ovaries.²

An efficient use of the cryopreserved cortical follicular reserve remains a challenge. In order to produce meiotically and developmentally competent oocytes through in-vitro tissue culturing, many hurdles still remain.³ The goal of storing ovarian tissue is to safeguard the primordial follicle pool for destructive influences originating from gonadotoxic treatments. Autologous transplantation of the stored

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tissue in post-pubertal women most commonly orthotopically.^{4,5} However, not all patients are eligible for transplantation and therefore several groups have attempted to culture ovarian tissue in-vitro.^{6,7}

They remain in a dormant phase until being recruited into the growing pool via a process known as primordial follicular activation.^{8,9} Physiologically, only a limited number of primordial follicles are activated to enter the growing follicle pool each wave. The pool of primordial follicles drops sharply with the increase of a woman's age, especially after 35 years.¹⁰ With this background the present study has been designed to evaluate the morphological and histological parameters of ovary in Sylhet MAG Osmani Medical College. This sort of information is undoubtedly best gathered through experience in the living subject, secondly to that approach and clearly prerequisite to it is the study of representative specimen i.e. anatomical study through autopsy. The appropriate knowledge about ovary is also important for sonologists and pathologists for proper diagnosis of ovarian diseases like ovarian cyst, ovarian carcinoma.

Materials and Methods

The cross-sectional observational study was carried out in the Department of Anatomy, Sylhet MAG Osmani Medical College, Sylhet in collaboration with the Department of Forensic Medicine, Sylhet MAG Osmani Medical College, Sylhet during the period from January 2016 to December 2016. Sixty pairs of human postmortem ovaries were collected. Consecutive, convenient sampling technique was applied to collect sample. The inclusion criteria were dead bodies autopsied within 36 hours of death. Considerable signs of decomposition or decomposed dead body, presence of gross ovarian disease and any history of poisoning cases were excluded. The collected specimens were divided into Group-A (18 to 45 years, reproductive age group), Group-B (46 to 51 years, perimenopausal group) and Group-C (52 to 65 years, postmenopausal group). Each group was subdivided into two sub-groups depending on laterality. All the specimens were examined for morphological parameters but only 18 specimens were examined histological parameters. For histological study, formalin fixed ovaries were taken. A 5mm 3 rectangular unblock was taken from each part of the ovary for preparation of tissue block. From each slide, three different fields were chosen for counting the number of the follicles.

Results

Table shows regarding age group 25(41.67%) were found age between 18-45 years of age, 20(33.3%) were found age between 46-51 years of age and 15(25%) were found > 52 years of age (Table-1). Total numbers of the follicles of the ovary were 46.17 ± 12.66 in group A, 11.83 ± 4.83 in group B and 3.33 ± 1.21 in group C. The highest total numbers of the follicles were found in the age group A and lowest total numbers of the follicles were in the age group C. The differences of total numbers of the follicles were significant between group-A and group-B ($p < 0.001$); and group-A and group-C ($p < 0.001$); but no significant difference was observed between group-B and group-C ($p = 0.080$) (Table-2).

Table 1: Distribution of the age post mortem human ovary

Age group	Number	Percentage
18-45 years	25	41.67
46-51 years	20	33.33
≥52 years	15	25.00
Total	60	100.00

Table 2: Total numbers of the follicles in different age groups

Age Group	Total numbers of the follicles	
	Mean ± SD	Range
A (18-45 years) (n=6)	46.17 ± 12.66	31.0-64.0
B (46-51 years) (n=6)	11.83 ± 4.83	6.0-18.0
C (52-65 years) (n=6)	3.33 ± 1.21	2.0-5.0
*p-value	A vs B $p < 0.001$; A vs C $p < 0.001$; B vs C $p = 0.080$	

***Comparison between age groups done by one way ANOVA (Post Hoc).**

Discussion

Regarding age group 25(41.67%) were found age between 18-45 years of age, 20(33.3%) were found age between 46-51 years of age and 15(25%) were found > 52 years of age. Similar observation was found difference studies Perven et al¹¹ and Lasienne et al.¹²

In current study showed that total numbers of the follicles of the ovary were 46.17 ± 12.66 in group A, 11.83 ± 4.83 in group B and 3.33 ± 1.21 in group C. The highest total numbers of the follicles were found in the age group A and lowest total numbers of the follicles were in the age group C. The differences of total numbers of the follicles were significant between group-A and group-B ($p < 0.001$); and group-A and group-C ($p < 0.001$); but no significant difference was observed between group-B and group-C ($p = 0.080$). Perven et al.¹¹ reported that the difference in number of the follicles of the ovary were statistically significant in between A & C and B & C age groups ($p < 0.001$). Qasim¹³, found that the total numbers of the follicles of the ovary were 43.33 ± 8.17 in age group of 13-45 years, 10.00 ± 5.47 in age group of 46-51 years and 1.17 ± 1.94 in age group of 52-65 years.

Grouping of the age, counting methods and magnification factors might be the cause of the difference of the present study.

Conclusion

Histomorphologically, the total number of the follicles is found maximum at reproductive years and is declined through perimenopause and postmenopause.

Conflict of interest:

There is no conflict of interest.

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