ORIGINAL ARTICLE

Cadaver Study if the Morphometry of the Ovary in Bangladeshi Women

*Hosna Ara Perven[1], Abu Sadat Mohammad Nurunnabi[2], Shamim Ara[3], Dilruba Siddiqua[4]

[1]*Dr. Hosna Ara Perven, Department of Anatomy, The Medical College for Women & Hospital, Uttara, Dhaka.*
[2]*Dr. Abu Sadat Mohammad Nurunnabi, Department of Anatomy, Dhaka Medical College, Dhaka.*
[3]*Prof. Dr. Shamim Ara, Department of Anatomy, Dhaka Medical College, Dhaka.*
[4]*Dr. Dilruba Siddiqua, Department of Anatomy, Ibn Sina Medical College, Dhaka.*

* Corresponding author

ABSTRACT

Ovarian morphological parameters e.g. length, breadth and thickness, may be affected by patients' age, laterality of the organ and presence of systemic disease. The present study was aimed to see the morphometric difference of ovaries in relation to age in Bangladeshi women and compare with previous local and foreign studies. This is a Cross-sectional descriptive type of study done in the department of Anatomy, Dhaka Medical College, Dhaka, from January to December 2009. The study was performed on 140 post mortem human ovaries collected from 70 unclaimed female dead bodies which were in the morgue under examination in the Department of Forensic Medicine, Dhaka Medical College, Dhaka. The samples were divided into three age-groups including group A (10-13 years), group B (14-45 years) & group C (46-52 years) and the length, breadth and thickness of the ovaries were measured by using a slide calipers and recorded. The difference in mean length, breadth and thickness between the right ovary and the left ovary was statistically significant in all age group. The differences were also significant between group A & group B, group A & group C and group B & group C.

Key Words: Morphometry, Human Ovary, Length, Breadth, Thickness

Introduction

The ovaries are the primary female reproductive organs and endocrine glands, which are situated in the lesser pelvis on each side of the uterus and are attached to the posterior layer of the broad ligament below and behind corresponding uterine tube[1]. Ovarian pathology can manifest in various ways e.g. menstrual abnormality, cystic disease, infertility, benign or malignant tumours etc. Exact knowledge of the normal morphometry e.g. the length, breadth and thickness of the ovary, may facilitate the gynaecologists, endocrinologists, pathologists and radiologists to adopt appropriate diagnosis and treatment of various clinical conditions associated of the ovary[3]. Ovarian morphological parameters e.g. length, breadth and thickness, may be affected by patients' age, laterality of the organ and presence of systemic disease[4]. Moreover, it has been observed by various researchers that the dimensions of different organs in Bangladeshi population have got variations from those of the western population[5]. It is also observed by reviewing the literature and the texts that several works have been done on the ovary in foreign countries but proper attention has not been given to the normal morphological study in our country[6]. Therefore, the study of the weight of this important organ has been designed to see whether there is any variation with age in Bangladeshi women as well as with those of the western studies.

Materials And Methods:

Materials of the study:

A cross-sectional descriptive type of study was designed and done in the Department of Anatomy, Dhaka Medical College, Dhaka, from

January to December 2009, based on collection of 140 human ovaries from 70 unclaimed female dead bodies (age range 12-52 years) that were under examination in the Department of Forensic Medicine, Dhaka Medical College, Dhaka, from May to October 2009. All the samples were collected within 24-36 hours of death without any sign of putrefaction and taken from medicolegal cases excluding poisoning, any cutting or crushing injury to the ovary, ovary found in one side and diseased ovaries.

This study was approved by the Ethical Review Committee of Dhaka Medical College, Dhaka.

Methods

After isolation, the samples were divided into three age-groups i.e. group A (10-13 years), group B (14-45 years) & group C (46-52 years), according to Kumar and Malhotra (2008)[7].

Table I. Grouping of the sample of the present study (n = 140)

Group	Age limit in years	Number of samples	
		Right	Left
A	10 - 13	7	7
B	14 - 45	50	50
C	46 - 52	13	13

Here, group A is pre-menarche group, group B represents reproductive age and group C is post menopausal group.

Morphometric measurement of the ovary

The ovary was taken and its outer surface was dried with blotting paper. The length of the ovary was determined from the measurement of its upper pole to the lower pole, breadth was measured transversely at its maximum and thickness at the region of its maximum antero-posterior diameter by using a slide calipers, according to Ahmed et al. (2007)[6]. For each parameter, three readings were taken and the average result was recorded.

Statistical processing of data

The collected data were processed and statistical analyses were done by one-way ANOVA test. All the statistical analyses were done by using the SPSS 13.0 version.

Results

The difference in mean length, breadth and thickness between the right ovary and the left ovary was statistically significant in all age group. The differences were also significant between group A & group B, group A & group C and group B & group C. The results of the present study are given in Table: II, III & IV.

Table II. Length of the ovary

	Length (cm)		
Age group	Right (mean±SD)	Left (mean±SD)	P value
A (n=7)	2.89±0.11 (2.70-3.00)	2.66±0.13 (2.50-2.80)	<0.01**
B (n=50)	3.73±0.25 (3.20-4.20)	3.47±0.26 (2.90-4.00)	<0.001***
C (n=13)	2.22±0.11 (2.00-2.40)	2.02±0.08 (1.80-4.00)	<0.001***
	P value	P value	
A vs B	<0.001***	<0.001***	
A vs C	<0.001***	<0.001***	
B vs C	<0.001***	<0.001***	

Table III. Breadth of the ovary

	Breadth (cm)		
Age group	Right (mean±SD)	Left (mean±SD)	P value
A (n=7)	1.51±0.09 (1.40-1.60)	1.31±0.09 (1.20-1.40)	<0.01**
B (n=50)	2.17±0.21 (1.60-2.60)	1.95±0.21 (1.30-2.30)	<0.001***
C (n=13)	1.12±0.11 (1.00-1.30)	0.93±0.08 (0.80-1.00)	<0.001***
	P value	P value	
A vs B	<0.001***	<0.001***	
A vs C	<0.001***	<0.001***	
B vs C	<0.001***	<0.001***	

Table IV. Thickness of the ovary

	Thickness (cm)		
Age group	Right (mean±SD)	Left (mean±SD)	P value
A (n=7)	1.17±0.08 (1.00-1.20)	0.97±0.08 (0.80-1.00)	<0.001***
B (n=50)	1.40±0.16 (1.10-2.00)	1.18±0.15 (1.00-1.70)	<0.001***
C (n=13)	0.64±0.10 (0.50-0.80)	0.48±0.06 (0.40-0.60)	<0.001***
	P value	P value	
A vs B	<0.01**	<0.001***	
A vs C	<0.001***	<0.001***	
B vs C	<0.001***	<0.001***	

Discussion

According to Copenhaver, Kelly and Wood (1978)[8], the length, breadth and thickness of the ovary were 4 cm, 2 cm and 1 cm respectively. Forabosco et al. (1991)[9] studied 5 left neonatal ovaries and found the mean length, breadth and thickness to be 13 mm, 5.7 mm and 4 mm respectively. Damjanov and Linder (1996)[10], Young and Heath (2000)[11] stated the ovarian length to be 3-5 cm. Both Romanes (2000)[12] and Fawcet (2004)[13] stated that the ovarian length, breadth and thickness would be 3 cm, 1.5 cm and 1 cm respectively. Moore and Agur (2002)[14] stated the breadth and the thickness of the ovary to be 1.5 cm and 1 cm respectively. Kumar et al. (2010)[2] stated that during active reproductive life, the ovaries' measurement found to be about 4 cm × 2.5 cm × 1.5 cm respectively. Both Rosai (2004)[15] and Krantz (2007)[16] mentioned its breadth to be 1.5-3 cm and thickness 0.7-1.5 cm. Healy (2008)[1] stated that, the ovarian length, breadth and thickness were found to be 2.0 cm × 1.5 cm × 0.5 cm in early menopause and 1.5 cm × 1.0 cm × 0.5 cm in late menopause respectively. Both Sinnatamby (2006)[17] and Dutta (2009)[18] stated that those measurements would be 3 cm × 2 cm × 1 cm respectively. Ahmed et al. (2007)[7] studied 62 pair of ovaries and found the mean length of the right ovary and left ovary 2.81±0.52 cm and 2.50±0.42 cm in group A (2-13 years), 3.64±0.92 cm and 3.50±0.78 cm in group B (14-45 years) and 4.15±0.53 cm and 4.32±0.83 cm in group C (46-80 years) respectively in Bangladeshi cadavers. They found the breadth of the right ovary and left ovary 1.45±0.42 cm and 1.38±0.35 cm in group A, 1.88±0.46 cm and 1.88±0.51 cm in group B and 2.01±0.46 cm and 1.67±0.47 cm in group C respectively. They also found that. According to Kumar and Malhotra (2008)[6], those measurements would be 3.5 cm, 1.5-2.5 cm and 1.5-2.5 cm respectively. The present study reveals the fact that the mean±SD length. The highest mean weight was found in group B and the lowest was in group C in both the ovaries. The above mentioned result is similar to that of Damjanov and Linder (1996)[10], Romanes (2000)[12], Rosai (2004)[15], Krantz (2007)[16], Ahmed et al. (2007)[7] and Kumar and Malhotra (2008)[6]. This may be due to racial variation and difference in measuring procedures.

Conclusion

Further studies with larger sample and high technical backup are recommended. The results of the present study can be used as a standard reference for the ovaries of Bangladeshi women and to determine the abnormal evidences in Forensic and Pathologic corpses.

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