

Autopsy Study of Organ Weights In Relation To Age in Jamnagar Region

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ABSTRACT: Background: The organ weight is one important indicator of possible organ diseases to discern normal from abnormal ones in forensic pathology as well as in clinical medicine. Any deviation from the normal weight suggests the presence of some pathology or trauma, guiding in the determination of the exact cause of death. **Aims:** to see the correlation between organ weights and age. **Material method:** This study was conducted at the mortuary of M. P. Shah Medical College, Jamnagar during the period of February 2010 to November 2010. In the present study 449 cases (272 Male, 177 Female) were included. Organ weight was measured and correlate with age. Statistical analysis was done and compared with standard Indian texts and the earlier studies. **Results and Conclusion:** Weights of all organs were started decreasing early in female as compared to male as far as age is concerned. Mean weights of all organs were started decreasing in old age after attaining peak, which was different for different organ.

Keywords: -organ weights, autopsy, age

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INTRODUCTION:

The organ weight is one important indicator of possible organ diseases to discern normal from abnormal ones in forensic pathology as well as in clinical medicine¹. In almost all the branches of Medicine, doctors need to know the normal organ weights and measurements, so also the Forensic Experts, as any deviation from the normal weight (increase or decrease), suggest the presence of some pathology or trauma, guiding in the determination of the exact cause of death. However, the organ weights depend on the Race, Age, Gender, State of Nutrition, the Environmental conditions of the place of residence and Socioeconomic Conditions. In a vast country like India, where the Environmental and Socioeconomic conditions have a very wide range, weighing of organs at autopsy is not merely an exercise but has great medicolegal importance. So this study was undertaken to show relation of organ weight with age.^{2,3}

MATERIAL AND METHODS:

This study was conducted at the mortuary of M. P. Shah Medical College, Jamnagar during the period of February 2010 to November 2010. In the present study 449 cases of adults (272 Male, 177 Female) were included. Organ weight was measured and correlate with age. In the present study all the cases were included except those cases in which studied organ were injured or decomposed. The organs which were included in the study were brain, heart, liver, spleen, both lungs and both kidneys. Standard autopsy protocol and procedure as described in standard textbook⁴ were employed for removal of various organs. After removing the extraneous tissues and draining of the blood, the organs were washed with water and then weighed using an electronic weighing machine. The data were collected in a Microsoft Excel and analyzed to show the relationship of organ weights with age.

OBSERVATION AND DISCUSSION:**Brain weight Vs Age**

Graph no. 1 show that in both sexes brain weight was started increasing with age up to 50 years of age. After attaining peak, the weight of the brain was decreasing. Average brain weights were higher in the age group of 41-50 years as compared to other age groups in both sexes, which was similar to the results of various studies¹. According to Batra et al⁵, Maximum brain weights were observed in the age group 11-20 years and gradual fall in the brain weight was seen after the age of 20 years and aging effects was noted in both sexes to the more or less same extent contrary to findings observed by Gur and coworkers who suggested that women were less vulnerable to age related changes as far as the brain was concerned. According to Mathuramoon et al⁶, the brain weight was reduced as the age increasing. This was because under nutrition in the elderly has a relative effect on brain weight, probably because the brain contains only a small amount of glycogen and neutral fat.

Heart weight Vs Age

Graph no. 2 show that in male heart weight was increased up to 60 years of age, after that it was decreasing. But in female heart weight was increased up to 50 years of age, after that it was decreasing. So in both sexes heart weights were started decreasing after old age, which was opposite to result of various studies^{1,2,5,6}. According to Mathuramoon et al⁶, the heart weight was almost constant or even increased with increasing age. This phenomenon was also observed during middle age. UN-diagnosed systolic hypertension was frequently seen the middle age and elderly, mainly accounting for the increase in heart weight.

Liver weight Vs Age

Graph no. 3 show that in the male the weight of the liver was decreased after age of 30 years. After 40 years of age, again, it was increased up to 50 years of age, after that liver weight was started decreasing. But in female weight of the liver was increased up to 50 years of age, after that it was decreasing. So in both sexes liver weights were started decreasing after old age, which was similar to

the results of various studies.^{1,2,5}

Spleen weight Vs Age

Graph no. 4 show that in male spleen weight was increased up to 50 years of age, after that it was decreasing. But in female spleen weight was increased up to 40 years of age, after that it was decreasing. So in both sexes spleen weights were started decreasing after old age, which was similar to the results of various studies.^{1,2,5}

According to Sprogoe-Jakobsen et al,⁷ spleen weights were decreasing with increasing age, except for a small increase in the age group 70-79 years.

Right lung weight Vs Age

Graph no. 5 show that in male weight of the right lung was increased up to 60 years of age, after that it was decreasing. But in female weight of the right lung was increased up to 50 years of age, after that it was decreasing. So in both sexes the right lung weights were started decreasing after old age, which was similar to the results of various studies.^{1,2,5}

Left lung weight Vs Age

Graph no. 6 show that in male weight of the left lung was increased up to 40 years of age, after that it was decreasing up to 50 years of age, then again, it was increased up to 60 years of age, and then again it was starting to decrease. In female weight of the left lung was increasing up to 50 years of age, after that it was decreasing. So in both sexes left lung weights were started decreasing after old age, which was similar to the results of various studies.^{1,2,5}

Right Kidney Vs Age

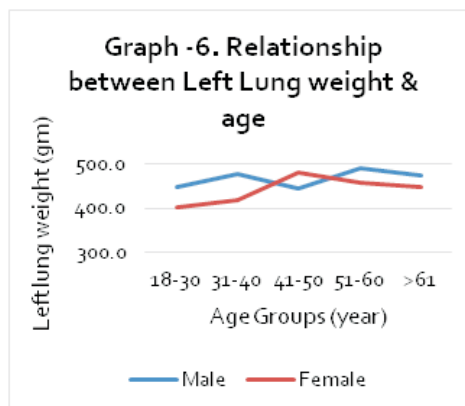
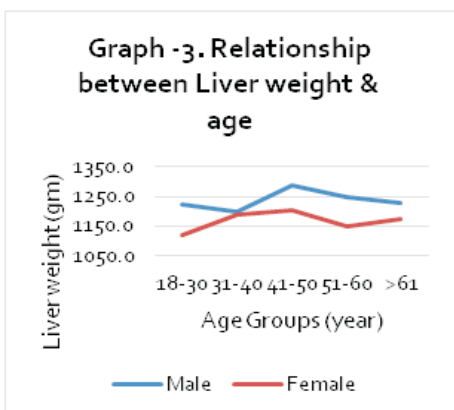
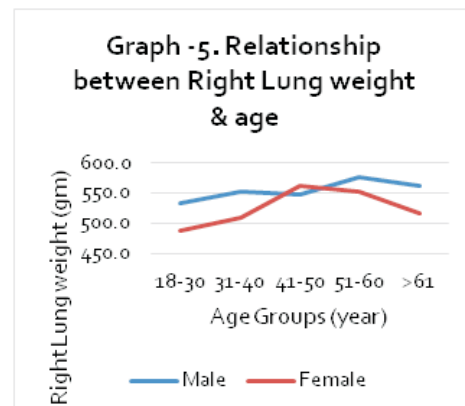
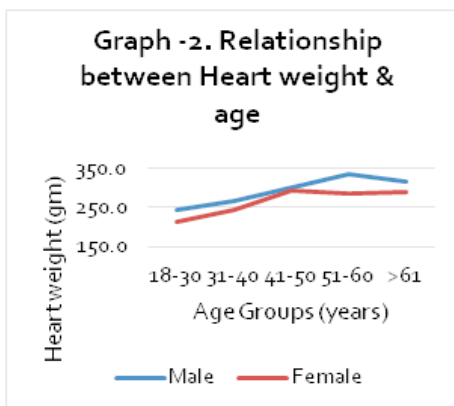
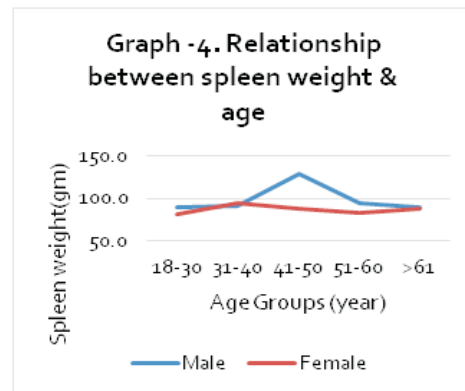
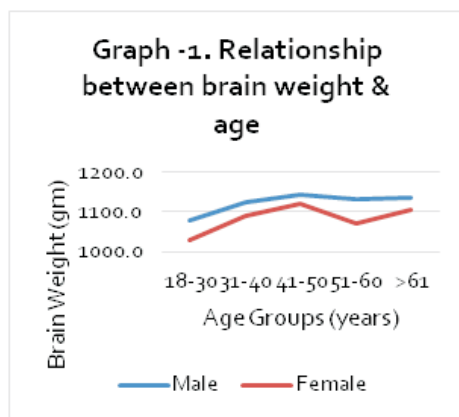
Graph no. 7 show that in male weight of the right kidney was increased up to 60 years of age, after that it was decreasing. But in female weight of the right kidney was increased up to 40 years of age, after that it was decreasing up to 60 years of age, then again it was started with increasing. So in both sexes right kidney weights were started decreasing after old age, which was similar to the results of various studies.^{1,2,5}

Left Kidney Vs Age

Graph no. 8 show that in male weight of the left kidney was increased up to 50 years of age, after that it was decreasing. But in female weight of the left kidney was increased up to 40 years of age, after that it was decreasing. So in both sexes left kidney weights were started decreasing after old age, which was similar to the results of various studies.^{1,2,5} From above discussion, it was concluded that the weights of all organs were started decreasing early in female as compare to male.

CONCLUSION:

Organ weights also play a significant role in estimation of body weight of an individual. The weights of all organs were started decreasing early in female as compared to male as far as age is concerned. Mean weights of all organs were started decreasing after attaining a peak in old age, which was different for different organ.



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