Секція 1. Експериментальна і клінічна морфологія.

**Dudenko V.G .**

Professor, Head of Department of the operative surgery and topographical anatomy,

**Vdovichenko V.I.**

PhD, MD, Assistant professor of Department of the operative surgery and topographical anatomy, Kharkiv National Medical University, Kharkiv, Ukraine

**Kurinnyi V.V.**

MD, Head of Department of endoscopic surgery

Military-medical clinical center of Northen region, Kharkiv, Ukraine

**ATTACHMENT ANGLES OF THE DIAPHRAGM IN THE SAGITTAL PLANE FOR MALE.**

**Introduction.** Individual spatial topography of the diaphragm is of great importance for understanding the organization of the body in a particular clinical case [1]. For diagnostic and particularly therapeutic manipulation knowledge of the individual characteristics of each patient is required. This knowledge allows you to avoid damage to the internal organs of the abdominal and thoracic cavities when they puncture (catheterization) and more accurately determine the localization of the pathological process, choose the method further surgical or conservative treatment [2, 3].

The purpose of our research was determination of the individual characteristics of the spatial topography of the human diaphragm in two vertical planes - sagittal and frontal based on SCT-research depending on gender, age and somatotype [4, 5].

According to the results of the measurements reveal the presence (or absence) of the relationship between individual characteristics and spatial topography of gender, age and the type of body structure. The resulting data were also used to make individual 3D modeling programs for human diaphragm [6].

Material the data of 75 patients surveyed in the last 2 years about various diseases of the abdominal and thoracic cavities. Any diaphragm with pathology was excluded. Analysis and image processing were performed on a workstation "HP-Z820" c using the specialized program "Vitrea 2".

Gender-based cases were: male – 61 and female – 14 cases. Age interval from 26 to 82 years old, according to the type of the structure revealed the following relationships - male hypersthenics - 35%, normosthenics - 60%, asthenics - 15%; for female following ratio was 30%, 50% and 20% resp. Type of body structure was determined by the index of Pinue. Due to the limited amount of messages we do not give all the findings are limited to the minimum and maximum values.
The height of the cupola of a diaphragm and angles of its attachment in the sagittal plane have been calculated.

The study of angles of attachment of the human diaphragm in the sagittal plane was made along next lines: vertebral (vl), paravertebral (pvl), scapular (sl) and posterior axillary (pal) lines for left side and the same lines except vertebral line for right side of body.

The data of the minimum and maximum values of the angle of attachment of the diaphragm in males are given in Table 1

Table 1

Minimum and maximum values of the angle of attachment of the diaphragm for male in the sagittal plane

|  |  |  |  |
| --- | --- | --- | --- |
| line | Asthenics | Normosthenics | Hypersthenics |
|  min |  max |  min |  max |  min |  max |
| vl (grad.) | asps |  26,4° |  58,6° |  33,6° |  95,4° |  29,6° |  60,0° |
|  5,2° |  40,2° |  10,0° |  43,4° |  9,2° |  48,4° |
| Left pvl(grad.) | asps |  35,7° |  91,0° |  27,7° |  89,2° |  15,0° |  102,8° |
|  20,5° |  75,0° |  23,3° |  76,5° |  17,1° |  80,6° |
| Left sl(grad.) | asps |  27,2° |  83,5° |  38,4° |  106,0° |  41,5° |  101,8° |
|  27,1° |  75,6° |  23,3° |  66,1° |  24,0° |  69,1° |
| Left pal(grad.) | asps |  27,2° |  92,6° |  38,4° |  106,0° |  41,5° |  101,8° |
|  24,0° |  75,5° |  16,1° |  54,1° |  23,1° |  51,7° |
| Right pvl(grad.) | asps |  32,6° |  74,4° |  16,1° |  73,5° |  42,4° |  85,3° |
|  32,9° |  80,5° |  24,1° |  76,1° |  17,5° |  72,5° |
| Right sl(grad.) | asps |  28,2° |  66,0° |  21,7° |  65,2° |  36,3° |  75,7° |
|  24,1° |  69,7° |  21,5° |  70,4° |  29,7° |  74,5° |
| Right pal(grad.) | asps |  22,1° |  46,0° |  16,6° |  68,5° |  19,5° |  76,6° |
|  20,4° |  63,0° |  21,5° |  81,7° |  24,8° |  75,5° |

Statistical analysis of the measurements revealed little correlation between the age and height of diaphragmatic cupolas in male. Other parameters were not correlated with the studied values ​​(sex and type of body structure).

Conclusion.Individual spatial topography of the diaphragm is highly variable and is practically independent of sex, age and type of body structure. In some cases (10%) in both sexes the height of the cupola of the diaphragm more on the left side than the right. Obtained data should be taken into account in the interpretation of X-ray research data and performing thoracentesis left.

**References.**

1. Adams D.C., Rohlf F.J., and Slice D.E. Geometric Morphometrics: Ten Years of Progress Following the 'Revolution' , Ital. J. Zool., 2004, 71, p. 5-16.
2. Ahmad I., Kaukab N., Ikram M., Hussain A. Anatomical Variations of Diaphragmatic Crura. Joumal of Rawalpindi Medical College, 2011, 15, 2, 120-122.
3. Hsu-Chong Yeh, Halton K.P., Gray C.E. Anatomic Variations and Abnormalities in the Diaphragm Seen with USI. Radiographics, 1990, 10, 6, 1019-1030.
4. Дуденко В. Г., Куринной В. В. Индивидуальная топография «слабых» мест диафрагмы человека. / Сб. трудов науч.-практ. конф.: «Морфология – медицинской Науке и практике». Минск. Республика Беларусь. - 2014 г. – с. 103-105.
5. Дуденко В.Г., Аврунин О.Г., Тымкович М.Ю., Куринной В.В. Построение персонализированной анатомической модели диафрагмы человека. / Ж. Експериментальна і клінічна медицина. Харків. – №2 (63), 2014. – с. 68-70.
6. Дуденко В.Г., Куринной В.В. Методика обработки медицинских зображений для предоперационного моделирования диафрагмы человека. / Ж. Експериментальна і клінічна медицина. Харків. – №3 (64), 2014. – с. 148-151.