

Евтушенко И.Я.

ВЛИЯНИЕ ПОЛА НА МОРФОМЕТРИЧЕСКИЕ ПОКАЗАТЕЛИ ПОЧКИ И ЧАШЕЧНО-ЛОХАНОЧНОГО КОМПЛЕКСА

Харьковский национальный медицинский университет,

Харьков, Украина

Материалом исследования послужили 175 препаратов чашечно-лоханочных комплексов человека зрелого и пожилого возрастов, полученные коррозионным методом. Были изучены морфометрические параметры почки и чашечно-лоханочного комплекса. В результате однофакторного дисперсионного анализа установлено, что пол оказывает влияние на все анализируемые органометрические показатели и почки, и чашечно-лоханочного комплекса. Наибольшее влияние пола проявляется в формировании показателей площади анатомического сечения почки и чашечно-лоханочного комплекса. Эти данные могут быть использованы в урологических клиниках при выполнении нефроурологических операций (экстракорпоральной литотрипсии, чрескожной пункции почечных чашек и т.д.)

Ключевые слова: почка, чашечно-лоханочный комплекс, почечная чашка

Yevtushenko I.Y.

INFLUENCE OF SEX ON MORPHOMETRIC PARAMETERS OF KIDNEY AND PYELOCALYCEAL COMPLEX

Kharkiv national medical university, Kharkiv, Ukraine

The material of the study was 175 preparations of pyelocalyceal complexes of a mature and elderly people, obtained by the corrosion method. Morphometric parameters of kidney and pyelocalyceal complex were studied. As a result of a single-factor analysis of variance, it has been established that sex affects all the analyzed organometric parameters of kidneys and pyelocalyceal complexes. The greatest influence of sex is manifested in the formation of area of the kidney and pyelocalyceal anatomical section. These data can be used in urological clinics for performing nephrourological operations (extracorporeal lithotripsy, percutaneous puncture of kidney calyx, etc.)

Key words: kidney, pyelocalyceal complex, kidney calyx

Introduction. The use of diagnostic (ultrasound, CT and MRI) and treatment (extracorporeal lithotripsy, percutaneous puncture biopsy, etc.) methods in a modern urology clinic requires further study of the structures of the pyelocalyceal complex (PCC) of human kidney. In the diagnosis of pathologies affecting the shape and size of kidney and pyelocalyceal complex in ultrasound, a special place is occupied by the presence of qualitative differences in the morphometric parameters of kidneys and pyelocalyceal complexes depending on sex [1-5].

Aim of the study: to detect morphometric characteristics of kidneys and pyelocalyceal complexes depending on sex.

Materials and methods. The material of the study was 175 human kidneys (88 kidneys of men and 87 kidneys of women), which were studied by methods of morphometry and statistical analysis.

Results and discussion. Among the organometrically determined parameters of human kidney and PCC, the most significant ones should be distinguished: length, width, and area of anatomical section. The kidney and the PCC are characterized by considerable individual variability depending on gender, age, constitutional type, and some other factors; therefore, variational statistics parameters are used for quantitative description.

In a specially conducted morphometric study, mean length, width, anatomical sectional area of the kidney and CLC were studied for individuals of both sexes and whole group (Table 1).

Table 1

Data of morphometric signs of kidneys of mature and elderly people depending on sex

| | | | |
|-------------------------------------|-----------|------|-------------------|
| Dk – kidney width, mm | | | |
| men | 48-80 | 63 | 62,3±6,4 |
| women | 34-68 | 55 | 55,3±7,0 |
| both sexes | 34-80 | 59 | 58,8±7,7 p=0,10 |
| Lk – kidney length, mm | | | |
| men | 85-142 | 113 | 113,9±10,4 |
| women | 84-130 | 106 | 106,1±10,6 |
| both sexes | 84-142 | 110 | 110,6±11,2 p=0,19 |
| Sk – kidney square, cm ² | | | |
| men | 40,8-96,2 | 69,7 | 70,9±10,4 |
| women | 36,1-82,9 | 59,2 | 59,5±11,3 |
| both sexes | 40,8-97,2 | 66,0 | 65,2±12,3 p=0,04 |
| Dpcc – PCC width, mm | | | |
| men | 20-63 | 40 | 40,6±6,4 |
| women | 30-57 | 38 | 39,0±5,4 |
| both sexes | 22-63 | 38 | 39,8±6,0 p=0,38 |
| Lpcc – PCC length, mm | | | |
| men | 37-92 | 67 | 67,0±10,1 |
| women | 49-83 | 63 | 64,9±8,7 |
| both sexes | 37-92 | 65 | 65,6±9,5 p=0,23 |
| Spcc – PCC square, cm ² | | | |
| men | 11,1-57,3 | 27,2 | 27,8±7,1 |
| women | 15,0-44,0 | 23,8 | 25,1±5,7 |
| both sexes | 11,4-57,3 | 25,7 | 26,4±6,6 p=0,17 |

Kidney length varies between 84.0-112.0 mm, its average value is 110.6 ± 11.2 mm; for men -113.9 ± 10.4 mm, for women -106.1 ± 10.6 mm ($P=0.19$). The width of the kidney within 34,0-80,0 mm, the average value is equal to 58.8 ± 7.7 mm for men $-62,3 \pm 8,4$ mm, for women $-55,3 \pm 7.0$ mm ($P = 0,10$).

The area of kidney anatomical section varies in the range of 40.8-97.2 cm², the average value is 65.2 ± 12.3 cm², for men -70.9 ± 10.4 cm², for women $-59.5 \pm 11,3$ cm² ($P = 0.04$).

The height of PCC is in the range of 37.0-92.0 mm, its average value is 65.6 ± 9.5 mm, for men -67.0 ± 10.1 mm, for women -64.9 ± 8.7 mm ($P = 0.23$).

The width of the PCC ranges from 22.0 to 63.0 mm, the average value is 39.8 ± 6.0 mm, for men -40.6 ± 6.4 mm, and for women -39.0 ± 5.4 mm.

The area of PCC anatomical section is in the range of 11.4-57.3 cm², the average value is 26.4 ± 6.6 cm², for men -27.8 ± 7.1 cm², for women $-25.1 \pm 5,7$ cm² ($P=0.17$).

It should be noted that in the study of linear dimensions and area of the anatomical section, a significant difference in mean sizes among men and women was established for the area of kidney anatomical section (70.9 ± 10.4 cm² in men and 59.5 ± 11.3 cm² in women) and kidney width (Dk): for men -62.3 ± 6.4 mm, and for women 55.3 ± 7.0 mm.

Conclusions. We have established a significant difference in the mean widths (Dл) and area of anatomical section (Sk) of kidneys in men and women. In the remaining morphometric parameters of kidneys (length - Lk, and of pyelocalyceal complexes - length - Lpcc, width - Dpcc, square- Spcc) no significant difference was found with sex. As a result of a single-factor analysis of variance, it has been established that sex affects all the analyzed organometric parameters of kidneys and pyelocalyceal complexes. The greatest influence of sex is manifested in the formation of square of anatomical section of the kidney and pyelocaluceal complex, the effect of sex of average strength is manifested in the formation of kidney height and width.

In the formation of indicators of width and height of the pyelocalyceal complex, the effect of sex is practically absent.

References.

1. Бурых М. П. Анатомия чашечно-лоханочного комплекса почки человека в постнатальном онтогенезе / Михаил Прокофьевич Бурых. – Харьков, 2000. – 84 с
2. Murlimanju B.V., Kumar B.M., Kumar N. et al. Morphometric parameters of the human and adult kidney: An anatomical study / *Int.J.Morphol.*, 32(2), p.656-659, 2014
3. Shin H.S., Chung B.H., Lee S.E. et al. measurement of kidney volume with multi-detector computed tomography scanning in young Korean / *Yonsei Med. J.*, 50 (2), p. 262-265, 2009
4. Shin H.S., Chung B.H., Lee S.E. et al. measurement of kidney volume with multi-detector computed tomography scanning in young Korean / *Yonsei Med. J.*, 50 (2), p. 262-265, 2009
5. More M.S., Togale M.D., Dixit D. et al. A morphometric study of human adult cadaveric kidneys / *MedPulse - International Medical Journal*, 2(6), p.355-358, 2015