**2. Теоретична медицина: основні напрямки розвитку**

**CLINICAL ASPECTS OF THE STUDY THE TOPOGRAPHY OF HUMAN RENAL PYRAMIDS**

Dudenko Volodymyr Hryhorovych

Doctor of Medical Science, MD, Professor, Head of Department of Clinical Anatomy and Operative Surgery, Kharkiv National Medical University, Kharkiv, Ukraine

Vdovichenko Viacheslav Yurievich

Philosophy Doctor, MD, Associate Professor of Department of Clinical Anatomy and Operative Surgery, Kharkiv National Medical University, Kharkiv, Ukraine

Korobka Inna Mykolaivna

MD, Kharkiv city policlinic #3, Kharkiv, Ukraine

Computer three-dimensional visualization using in relation to the kidney and its structure, obtaining of three-dimensional computer kidney models and renal pyramids and using of topographic coordinates system will be the basis for individual anatomical study of diagnosis of kidney disease, will contribute to the choice of optimal medical treatment, development and individual planning surgical accesses and planning of operations, expanding the scope of minimally invasive operations with conservation as far as possible more than a healthy part of the body, and a decrease in operative time and recovery, as well as the development of new methods for prevention and diagnosis of human renal diseases [1, 2].

150 human kidneys of mature and elderly age of both sexes who died after accident or died after diseases without any pathology of the urinary system were used to study the spatial arrangement of the renal pyramids.

Linear and volumetric morphometric parameters of all examined organs were measured, standard methods for anatomical study: dissection, preparation, macroscopy, volumetry and morphometry of native kidneys, injecton of mixture containing a quick-solid plastic in renal pyelocaliceal complex, making a plane-parallel topographo-anatomical dissections of kidney in horizontal plane, morphometry of renal pyramids according to plane-parallel topographo-anatomical sections, statistical processing and mathematical analysis of the data obtained.

According to obtained dates, the topographic coordinate system was adapted for evaluate sector coordinate topography of renal pyramids in the local coordinate system of the human kidney [3-7].

Through the kidney were conducted conditional horizontal (axial) plane (topographic parallels) at middle of renal hilum - equator (P6), through the upper edge of the renal hilum - superior parallel (P4), the lower edge of the renal hilum - inferior parallel (P8), the most proximal parallel (P0) and the most distal (P12) - correspond to the upper and lower pole of the kidney. The upper and lower renal parallel conditionally divide human kidney on the upper, middle and lower sections.

In the upper part of the human kidney equally held more parallels P1, P2, P3, in the middle section - more parallels P5, P6 and P7, in the lower part - more parallels P9, P10 and P11.

To study the topography of the renal pyramids used 12 anatomical human renal meridians conducted at intervals of 30° separating kidney to 12 renal topographic sectors. It was adopted as the zero meridian, which passes through the middle of the distance between the anterior and posterior edges of the renal hilum at the center of the topographic parallel P6.

Each renal pyramid opens into a minor renal calyx. Pyelocaliceal complex includes the following minor renal calyces (by M.P.Buryh) - superior; - anterior superior and posterior superior; - anterior middle and posterior middle; - anterior inferior and posterior inferior; - inferior minor renal calyx.

In human kidney in our material was found from 8 to 20 renal pyramids. The study used the following working classification of renal pyramids, based on the location of renal pyramids in parenchyma and according to opening to renal calices of the kidney:   
*pyramids of upper end of kidney (extremitas superior renalis):* - superior medial (pms), - superior lateral (pls), - superior anterior (pas), - superior posterior (pps) - drain into the superior minor renal calyx; - anterior superior medial (pmsa), - anterior superior lateral (plsa) - drain into the anterior superior minor renal calyx; - posterior superior medial (pmsp), - posterior superior lateral (plsp) - drain into the posterior superior minor renal calyx;

*pyramids of middle part of the kidney (in projection of a renal gate [hilum renale]):* - anterior superior gating (phsa), - anterior inferior gating (phia) - drain into anterior middle minor renal calyx; - posterior superior gating (phsp), - posterior inferior gating (phip) - drain into the posterior middle minor renal calyx;

*pyramids of lower end of kidney (extremitas inferior renalis):* - inferior medial (pmi), - inferior lateral (pli), - inferior anterior (pai), - inferior posterior (ppi) - drain into the inferior minor renal calyx; - anterior inferior medial (pmia), - anterior inferior lateral (plia) - drain into the inferior anterior minor renal calyx; - posterior inferior medial (pmip), - posterior inferior lateral (plip) - drain into posterior inferior minor renal calyx.

The proposed classification of renal pyramids can be used for study the spatial location and morphometric parameters of the renal pyramids, as well as to develop the most efficient surgical treatment when planning organ-saving operations on the kidney.

**References**

1. Lofgren F. Das topographische system der malpighischen Pyramiden der Menschenniere / F. Lofgren. – Lund: hakan ohlssons bortryckert, 1949. – 200 s.
2. Бурых М. П. Анализ количественно-пространственной организации пирамидно-чашечно-лоханочной системы почки человека. / М. П. Бурых, В. Д. Зинченко, В. А. Шусь // X Всесоюзный съезд анатомов, гистологов и эмбриологов. – Полтава, 1995. – С. 61.
3. Бурих М. П. Функциональная морфология и морфометрическая классификация почечных чашек человека: метод вказівки до практичних занять студентів та лікарів-інтернів /Бурих М. П. – ХДМУ, 1998. – 48 с.
4. Semb C. Partial resection of the kidney. Operative technique. / C. Semb //Am.J.Roentgenol. – 2005. – Vol. 145, N. 2. – P. 315–319.
5. Ворощук Р. С. Применение метода восельного анатомического моделирования в изучении анатомии и топографии почечных пирамид человека / Р. С. Ворощук // Український морфологічний альманах. – 2006. – № 4. – С. 40–45.
6. Пространственная реконструкция биологических объектов с помощью компьютерного моделирования / И. В. Твердохлеб, И. С. Хрипков, Л. А. Романенко [и др.] // Матер. конф.: ІІІ наукова конференція „Карповські читання” (11–14 квітня, 2006). – Дніпропетровськ, 2006. – С. 57–59.
7. Vdovichenko V. Y. Renal medulla anatomy based on virtual anatomical models of the human kidneys applying to the mini-invasive surgery planning / V. Y. Vdovichenko, R. S. Voroshchuk, D. G. Shuba // European Journal of Medical Research. – 2007. – P. 3.