



MULTIDISCIPLINARY VIEW OF THE KIDNEY

(anatomy, histology, embryology, biochemistry and pathology of the kidney)

R. Oravský¹, A. Pavlíková¹, M. Rudnay², A. Birková¹, J. Veselá², M. Mareková¹

¹ Ústav lekárskej a klinickej biochémie UPJŠ LF v Košiciach a Labmed, a.s.

² Ústav histológie a embryológie UPJŠ LF v Košiciach

Abstract

Study of medicine contains the ability to see human body as a unit. It means that students must have multidisciplinary view of each organ and system and must understand their connection through variety of biochemical pathways and physiological mechanisms. This educational work contains basic information about kidney, its anatomical and histological structure, embryological development, biochemical and physiological functions. From macroscopic view is important to know what anatomical structures can be found in healthy kidney. Histology explores characteristic cells and textures, embryology explains prenatal development and biochemistry is monitoring kidney metabolism and its connection to physiological functions. Pictures and diagrams schematically explain educational text. This work helps students to understand the integration of kidney in human body. It can be used also by teachers for more qualitative lectures.

Key words: multidisciplinary education, kidney

Introduction

Study of medicine contains enormous amount of knowledge about human body, its functions, diseases and options of treatment. To be a good doctor is not a status, it is a process. It means that it is very important to understand basics in medicine field during student years because only then is professional progression possible. It also means that good doctor of medicine should always be interested in new methods of diagnosis, new options of treatment a new discoveries in science. Sometimes is very hard to separate which information is useful and which is not necessary to know. In these days is progression of science faster than ability of human to absorb all new knowledge. Preclinical subjects such as anatomy, histology, embryology, biochemistry, physiology, biophysics, etc. give lessons about same things from different points of

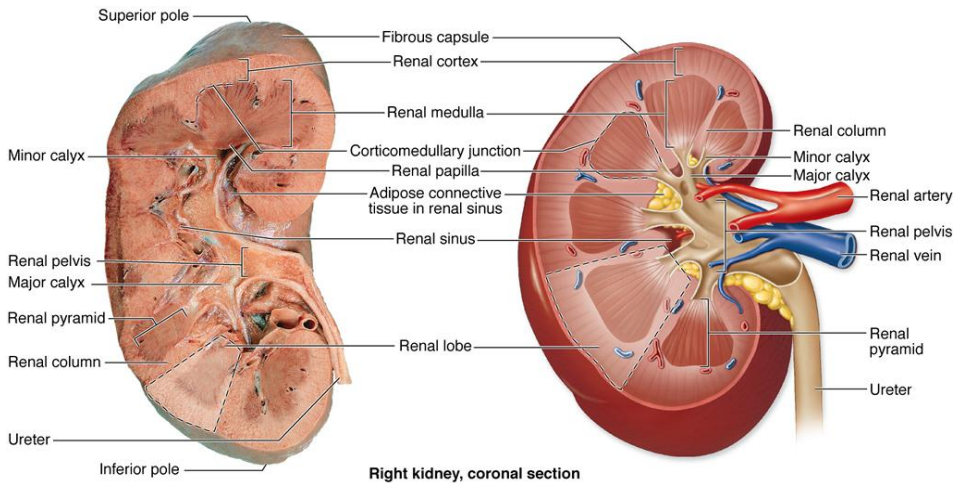


view. What could be – and many times really is – a problem for students is to connect all information about one specific problem and realize its importance in greater content. Successful diagnosis of diseases or scientific research requires this professional view.

Nowadays in modern era of science is impossible to monitor every discovery and new pieces of knowledge especially for students. There is a need for something more than textbooks that many times do not contain current information. Modern technologies give us an opportunity to make teaching and studying more effective and more current. There is an effort on faculties of medicine to provide the best form of education which would be accessible for everyone and would reflect up to date knowledge. E-learning aims to make these efforts real. Current students of medicine can gain needed information not only from books and lectures but also from university internet portal that contains interactive and helpful handouts that increase their level of preparation for final examination and future study. It has to be said that students have bigger motivation if there is an option of simple and interesting way of study.

Multidisciplinary view of the kidney

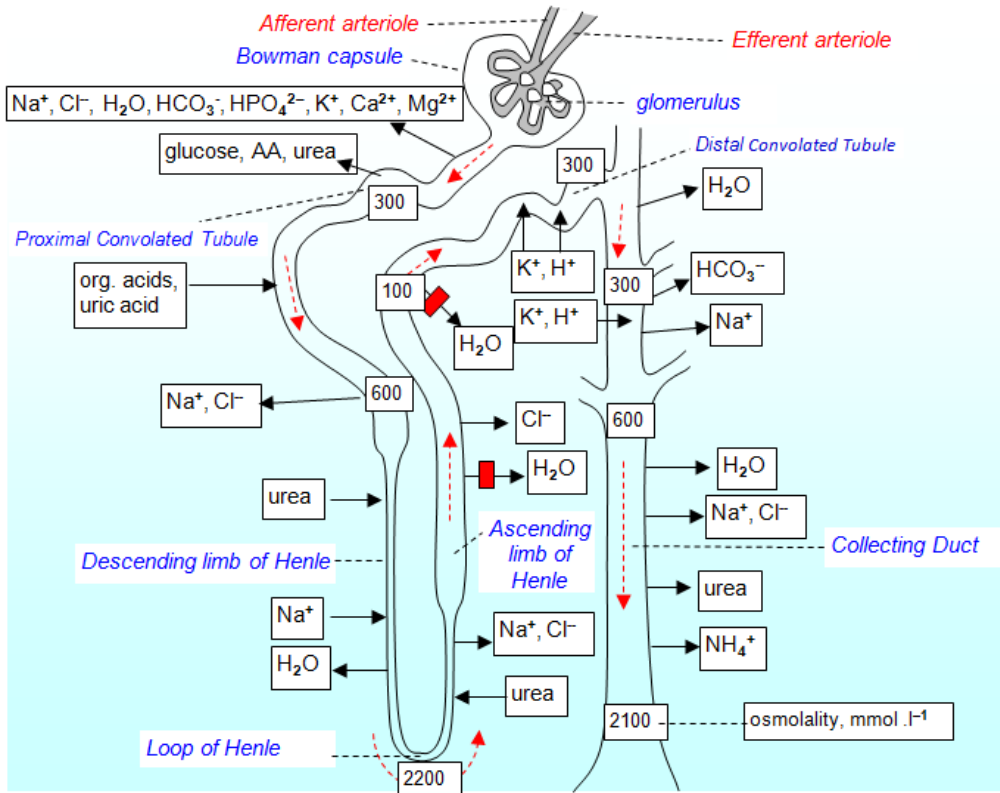
This article is meant to be an aid for students in their preclinical study in which should be found information that are essential for their further education. It is divided in individual chapters and subchapters that clearly and schematically explain macroscopic and microscopic structure, development during prenatal period, its major and minor functions, molecular reactions that influence other tissues and their functions, basics of kidney examination and pathologic states. Numerous intelligible pictures help to better understand the written text in visual and association form. Embryology explains morphology of kidney in prenatal period and anatomy and histology explains morphology of kidney after birth. Students must be perfectly educated in these fields because only then is further education possible. It is the first step which must be done in our



study of medicine and it does not concern only kidney. Also other organs and tissues must be studied from aspect of their morphology firstly. That is why first few chapters of this article deal with macroscopic and microscopic structure. The text in article is adapted for students that are not well educated in functions of human body yet. Professional expressions with no purpose are replaced by simple words with clear meaning that are professionally acceptable.

Although morphology is important, bigger part of article is about kidney functions. Biochemistry explains its molecular level, physiological and chemical reactions that are important to keep homeostasis in organism. After reading should reader of this article have detailed knowledge about kidney participation in acid-base balance, about kidney's influence through production of various substances and about production of urine.

Special chapter which includes basics of kidney pathology is meant to be an introduction for next clinical study.



Conclusion

To sum up, this article has an effort to show students how important are to be able to connect information from various subjects. It could also replace many university textbooks in first years during studying about kidney. Sources that were used are mostly up to date.

Multidisciplinary view of the kidney provides detailed information that should preclinical student learn and understand. All further education concerning kidney and urinary tract cannot be managed if there is lack of basics.

However is this article meant to give needed information about kidney mainly for students it could be also used by lectors, older students or



graduated students. It could be used for more effective and more quality lectures or just in case of needed revise.

Article is accessible on internet for every student and scientific employee of faculty of medicine on <http://portal.lf.upjs.sk/>.

Acknowledgment: KEGA 3/7130/09