# ABSTRACTS
# CLINICAL CASES SECTION

## DEPARTMENT OF HUMAN ANATOMY

### 1. MULTIPLE ABNORMALITIES OF THE RENAL PEDICLE

Author: **Arina Pogostin**
Scientific adviser: Angela Babuci, MD, Assistant professor, Department of Human Anatomy, *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

**Background.** Abnormalities of the renal pedicle appear as a result of embryogenesis disturbances. Supernumerary vessels and topographic variations are explained by persistence of the pro- and mesonephros segmental arteries during late stages of development.
**Case report.** By routine anatomical dissection of a male cadaver multiple variants of origin, number and topographic relationships of the left renal pedicle were revealed. The architectonics, number and topography of components of the left renal pedicle were atypical. From the abdominal aorta three renal arteries originated. The superior renal artery (SRA) had a diameter of 5 mm, but at a distance of 8 mm after its origin the SRA suddenly narrowed up to 2 mm for a distance of 13 mm, and then it recovered its lumen. Close to the superior pole of the left kidney the SRA bifurcated. The middle renal artery derived from the aorta at 63 mm below the SRA running on the external surface of the kidney and at a distance of 18 mm from the lateral margin of the kidney, it penetrated the renal parenchyma with two branches. Functionally the most significant was the inferior renal artery. It originated from the abdominal aorta at a distance of 80 mm below the SRA and divided into two branches, one of which was twice larger and three times longer. The superior left renal vein drained into the left colic vein, and the inferior one drained into the left common iliac vein. The ureter and renal pelvis with the greater calyces were located in front of the renal veins and arteries.
**Conclusions.** The left kidney was vascularized by three renal arteries, but the main arterial load was on the inferior renal artery. Double renal veins realized the venous drainage from the left kidney: the superior renal vein drained into the left colic vein, and the inferior one drained into the left common iliac vein.
**Key words:** kidney, renal pedicle, abnormality, variants

## DEPARTMENT OF BIOCHEMISTRY AND CLINICAL BIOCHEMISTRY

### 2. BIOCHEMICAL MECHANISMS IN NUCLEOTIDE REPAIR

Author: **Sergiu Gavriliuc**
Scientific adviser: Leonid Lîsîi, MD, PhD, University Professor, Department of Biochemistry and Clinical Biochemistry,
*Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

**Background.** Nucleotides are stable monomers of nucleic acids. They are required for a wide variety of biological processes and are constantly synthesized in all the cells. As cells proliferate, increased nucleotide synthesis is required for DNA replication and RNA production to support protein synthesis at different stages of the cell cycle, during which these events are regulated at multiple levels. Therefore, the synthesis of previous nucleotides is also strongly regulated at several levels.
**Case report.** In order to keep the quantity of nucleotides constant, the cell uses two important pathways: 1. novo synthesis 2. nucleotide repair with reuse of metabolic residues from pre-existing nucleotides. However, despite the existence of different repair pathways, most proliferative cells synthesize nucleotides and de novo nucleic acids, mainly from glucose, glutamine and $CO_2$. This was observed by using $C^{13}$ and $N^{15}$ labeled isotopes. Different parts of nucleotides come from different sources of carbon and nitrogen in the cell, and the RNTP (ribo-nucleotide-triphosphate) assembly requires a great amount of energy. Thus, starting from glucose, three equivalents of ATP are required to make activated ribose-5'-phosphoribosyl pyrophosphate (PRPP), which is produced by the reaction between 5'-phosphoribose with ATP, caused by the release of the 5'-AMP group. Pyrimidine rings are first synthesized in the form of uracil from aspartate, $CO_2$ (or bicarbonate) and glutamine, which require two ATP. Metabolic requirements for nucleotides and their bases can be met either by energy input or by de novo synthesis from precursors with low molecular weight. The ability to save nucleotides in the body alleviates any significant nutritional needs for nucleotides, so purine and pyrimidine bases are not required as part of the diet. The repair pathways are a major source for DNA, RNA and enzyme co-factors synthesis. Inside the body, the main system for de novo nucleotide synthesis, for the renewal and maintenance of intracellular pools, is the liver. After their synthesis in the liver, the nucleotides are dephosphorylated, next partially phosphorylated in nucleobases and ribose-1-phosphate for transport to the blood and subsequently uptake by the other cells. These processes are regulated at transcription level by a set of main transcription factors, but also at the level of the enzyme by allosteric regulation and feedback inhibition. Studies based on labeled isotopes provide important information on nucleotide biosynthesis, such as the preference for endogenously synthesized precursors, such as glycine and aspartate, compared to those provided externally, and how resources are re-allocated based on environmental conditions, particularly pathological conditions such as cancers ("metabolic reprogramming").
**Conclusions.** Almost all cells in the body are capable of synthesizing de novo nucleotides. The source of these molecules may be nucleic acids of their own tissues and foods, but these sources have only a secondary, auxiliary value.
**Key words:** nucleotide, repair, denote, labeled isotopes

## 3. HYPERPARATHYROIDISM IN THE CONTEXT OF MULTIPLE ENDOCRINE NEOPLASTIC SYNDROMES

Author: **Maria Boțoc**
Scientific advisers: Petru Cepoida, MD, PhD, Veronica Cernelev, PhD, University Assistant, Department of Biochemistry and Clinical Biochemistry
*Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova