**Kurzzusammenfassung:** Even if the total majority of all renal tumors are being conventional clear-cell renal carcinoma (CRC), the pathological classification consists of very broad spectrum of neoplastic entities. The Czech Republic is the country with the highest frequency of renal carcinoma and west-bohemian population with 27 cases per 100 000 inhabitants reaches the highest incidence in the Czech Republic. During last ten years, 2000 patients underwent the surgery due to the renal tumor, the sample of surgeries enables analysis of the imaging pattern of rare tumors and also to analyze the pre-surgical imaging. Except the most common CRC some rare tumors or rare CRC genotypes were observed – such as rosette forming tumor, tubulocystic tumor, loopoma, translocation renal carcinoma Xp11.2, PECOMA, hereditary papillary renal cell carcinoma, multiple tumors in end-stage kidney etc. During the presentation, the rare tumorous entities with their imaging appearances will be demonstrated including the dual-energy CT, MRI and PET. The personalized surgery planning will be presented including three-dimensional imaging of the affected kidney with vascular supply using CT-angiography or ceMRA and the indication using functional tumor imaging using hybrid methods. The role of CRC glycolytic phenotype to the survival in advanced tumors will be discussed.

**Lernziele:**
1/ incidence of the renal tumor types in large surgery samples
2/ to learn about less common kidney tumors and their imaging appearances
3/ how to select optimal imaging for concrete patient with renal tumor
4/ what is prognosis in patients with different glycolytic phenotype of the CRC