Objective: Papillary thyroid carcinoma (PTCa) is the most common form of malignant tumours of this organ, covering approximately 70 % in the structure of morbidity. One of important prognostic PTCa factors is pathological biomineralization. The purpose is to study morphological value of biomineralization in papillary thyroid cancer.

Method: Histological, histochemical techniques and scanning electron microscopy with microanalysis and X-ray diffraction were used to study the samples of PTCa.

Results: The first group of patients included 27 women and 3 men and the average age was 56.93 ±2.18 years old. In patients with symptoms of mineralization the largest tumour size was 1.84 ± 0.13 cm, in seven cases metastases were found in peripheral lymph nodes. Patients, who had no signs of PTCa mineralization, made up the second group of 30 people—24 women and 6 men. The largest tumour size averaged 1.44 ±0.09 cm (p<0.07), in eight cases metastases were found in peripheral lymph nodes. Comparing the number of patients with metastases in both groups (7—Group I, 8—Group II) and describing the size of tumour, subject to presence and absence of metastases in patients (2,09±0,2 cm and 1,31 ±0,17 cm), there was significant difference found between indicators of clinical cases of studied groups (p < 0.02).

Conclusion: Mineralized samples of papillary thyroid cancer reach larger compared to cases without evidence of calcification. Comparing the first and second series of samples PTCa showed no connection between bio-mineralization and age of patients. Hydroxyapatite is the main mineral, which is formed during pathological biomineralization PTCa.

Objective: Germline mutations in the TMEM127 (transmembrane protein 127) gene have been detected in familial pheochromocytoma paraganglioma and more recently in familial pheochromocytoma and renal cell carcinoma syndrome. Carney-Stratakis syndrome (Carney dyad) is characterized by a pheochromocytoma (PHEO)/gastrointestinal stromal tumour (GIST) dyad, secondary to SDHB, SDHC or SDHD gene mutations. We report a synchronous PHEO and GIST case in an individual with TMEM127 germline mutation.

Method: A 70-year-old woman presented with both a left adrenal nodule and a small gastric tumour (antrum wall), incidentally discovered during follow-up for horseshoe kidney. Both tumours (101 and 35 mm respectively) were excised with pathological, immunohistochemical and molecular stucies following.

Results: Pathological examination showed a PHEO immunopositive for chromogranin, synaptophysin and Ki-67 (≤1 %) but negative for cytokeratins (AE1/AE3). The GIST was positive for CD34, CD117(-kit), DOG1, smooth muscle actin (focal) and Ki-67 (5 %) but negative for cytokeratins, desmin and S100. Sequencing analysis was used for KIT gene screening in the PHEO and for KIT and PDGFIR in the GIST with negative results. Germline mutational analysis showed a heterozygous missense mutation in exon 4 of TMEM127: NM_017849.3:c.620C>T (p.Ala207Val) (Chr2:GRCh37:g.96919643G>A).

Conclusion: This is the first case of synchronous PHEO and GIST (Carney dyad) associated with germline mutation in the TMEM127 gene.

Objective: To determine prognostic criteria for pituitary adenoma depending on hormone production.

Method: We studied the hormonal state and Ki-67 proliferative index in 142 patients with pituitary adenomas. MRI was used to estimate the tumour size and to monitor its growth. Tumours exceeding 10 mm in size were defined as macroadenomas, and those smaller than or equal to 10 mm as microadenomas. Immunohistochemical staining was carried out with anti-bodies against Ki-67 and 6 pituitary hormones.

Results: Macroadenomas were mainly mammosomatotropinomas or gonadotropinomas with tumour with invasive growth and recurrence. Proliferative activities of micro- and macroadenomas were not significantly different. The average size of recurrent adenomas was 29 ± 12 mm (the non-recurrent ones were 17.6± 10 mm, p< 0.001), their proliferative activities did not differ. The proliferative activity of invasive adenomas was significantly higher than in non-invasive. Gonadotropinomas were more often recurrent and demonstrated invasive growth without clinical signs of hormonal hypersecretion.

Conclusion: Our study showed that the most part of gonadotropinomas did not have any clinical signs. In all the cases they were macroadenomas and often recurrent. The tumour proliferative activity more than 2.6 % can be used as a prognostic criterion only for gonadotropinomas.

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