Thyroid squamous cell carcinoma

Corina Lichiardopol[1], Valeriu Surlin[2], Mirela Ghilusi[3], Simona Bondari[4], Irina Stancu[5]

[1]Department of Endocrinology, University of Medicine and Pharmacy Craiova, Romania
[2]Department of Surgery, University of Medicine and Pharmacy Craiova, Romania
[3]Department of Pathology, Emergency Hospital Craiova, Romania
[4]Deparment of Radiology, University of Medicine and Pharmacy Craiova, Romania
[5]Department of Oncology, Emergency Hospital Craiova, Romania

ABSTRACT

Squamous cell carcinoma (SCC) is a very rare thyroid carcinoma with aggressive behavior and poor prognosis. Diagnostic difficulties reside in differentiating SCC from other thyroid malignancies and also in establishing its primary or secondary nature, which are both important for treatment strategy.

A 62 year-old woman, with unremarkable personal and family history, presented in October 2013 with progressive enlargement of a right neck mass with regional pain radiating toward the right ear and shoulder, hoarseness, inspiratory stridor and 10kg weight loss in the past two months. Physical examination revealed a 5cm hard, adherent thyroid nodule with impalpable inferior pole, without satellite lymph nodes. Laryngoscopy showed right vocal cord paralysis. On ultrasound the nodule was hypoechoic, with ill-defined margins, microcalcifications and necrotic areas. Contrast enhanced CT scan showed lateral impingement of neck vessels and trachea, retrosternal descent and intimate contact with the right brachiocephalic trunk. No lymph nodes, nor other masses were identified (putative sites of origin or metastases). Thyroid hormones, antithyroid antibodies and calcitonin were normal, while thyroglobulin was low 1.43ng/ml (NV 3.5-7.7). FNA cytology was inconclusive. Thyroidectomy was performed and histological examination revealed an infiltrative, malignant epithelial proliferation with keratinous foci, desmoplastic stroma, necrosis, hyalinization and calcifications. Immunohistochemistry diagnosed SCC – focal positivity for p63, diffuse positivity for CK7, CK19, 34beta E12, galectin 3 and negativity for TTF1 and CD5.The patient received three courses of Paclitaxel – 300mg.

In January 2014 thyroid recurrence was detected (three nodules up to 20mm).

Future research is needed to establish a better management of patients with thyroid SCC.

BACKGROUND

Primary squamous cell carcinoma of the thyroid (PTSCC) is a very rare malignancy (less than 1% of thyroid cancers) with aggressive behavior and poor prognosis, resembling anaplastic thyroid carcinoma (Lam LY et al 2001, Korovin GS et al 1989), from which it is clinically indistinguishable.

Areas of squamous cell metaplasia are found in adenosquamous carcinomas, up to 43% of papillary carcinomas and many anaplastic carcinomas (Katoh R et al 1989) but PTSCC is composed only of squamous cells.

PTSCC must be differentiated from CASTLE (carcinoma showing thymus like elements) which shows CD5 positivity, and from secondary SCC directly invading the thyroid or metastatic by the pattern of cytokeratin expression-CK19 and CK7 positivity in primary TSCC (Fassan M et al 2007)- and by imaging studies.

Establishing the primary or secondary nature of the thyroid SCC is very important for treatment strategy and prognosis. Primary TSCC has a worse prognosis regardless of therapy (surgery, chemotherapy, radiotherapy or combined). Management of secondary TSCC depends of the site and the stage of the primary tumor (Syed M et al 2010).

The median survival time in primary TSCC is 12.2 months; tumor size, esophageal invasion and treatment policy are independent factors for overall survival (Zhang YX et al 2013).

CASE REPORT

A 62 year-old female patient presented for progressive enlargement of a right neck mass, regional pain radiating toward the right ear and shoulder, cough, hoarseness, inspiratory stridor, weight loss (10kg) lasting for two months.

Family history – hypertension.

Personal history – mild hypertension.

Physical examination revealed a 5cm hard, adherent right thyroid nodule, with impalpable inferior pole and impingement of the right carotid artery, dyspnoea, dysphagia and hoarseness. No lymph nodes were detected. Height – 145cm, weight – 68 kg, BMI = 33kg/m2, normal BP, tachycardia (100 beats/minute), varicose veins.

ENT exam – right vocal cord paralysis.

Ultrasound exam – right, 5 cm thyroid nodule, hypoechoic, with ill-defined margins, with multiple microcalcifications and necrotic areas. No satellite lymph nodes were found, no abdominal or pelvic masses. Liver steatosis.

Contrast enhanced CT – 5.45/5.23cm right thyroid mass with parietal microcalcifications (figure 1); tracheal displacement to the left; encasement of the right brachiocephalic trunk. No other masses (neck, chest, abdomen, pelvis) were found.

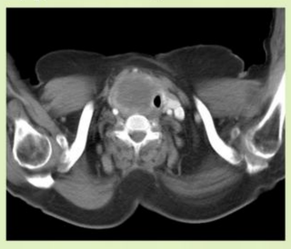

Fig.1

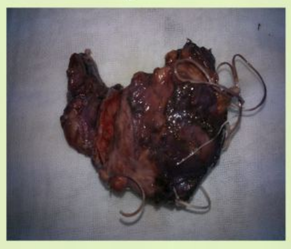

Fig.2

FNAC – absent follicular cells, frequent erythrocytes, rare neutrophils and lymphocytes.

Hormonal assessment - TSH 0.887µIU/mL (0.27-4.2), FT4 19.95pM/L (12-22), ATPO 18IU/ml (<34), anti TGAb 19.35 IU/mL (<115), calcitonin<2pg/mL (<13), thyroglobulin 1.43ng/mL (3.5-7.7).

Laboratory assessment – normal except fasting blood glucose 144-118-144mg/dL, HbA1c =6.43%, Cholesterol = 231mg/dL and ESR 25/46mm.

Pathological examination after total thyroidectomy (figure 2) confirmed SCC.

Right thyroid lobe – 5.5/4.5 encapsulated yellowish, inhomogeneous mass with hemorrhagic areas.

Histological examination – infiltrative, diffuse malignant epithelial proliferation with keratinous foci, keratin pearls, large areas of squamoid differentiation (figure 3), necrosis and hyalinization, calcifications, desmoplastic stoma, chronic inflammatory reaction and invasion of the adjacent thyroid and muscular tissue.

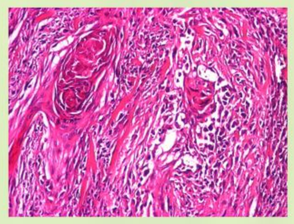

Fig.3

Left thyroid lobe – interstitial fibrosis, areas of necrosis and hemorrhage.

IHC - intense and diffuse positivity for CK7 (figure 4), 34BetaE12 (figure 5).

- diffuse positivity for CK19 (figure 6), Galectin 3 (figure 7).
- focal positivity for p63
- negativity for TTF1, CD5

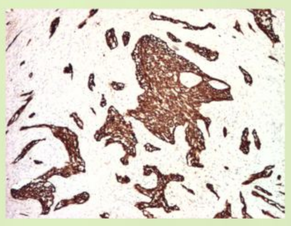

Fig.4

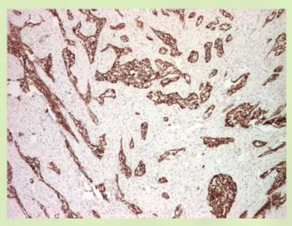

Fig.5

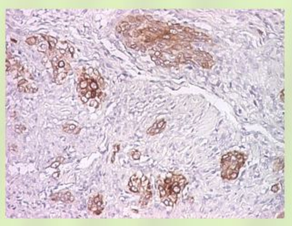

Fig.6

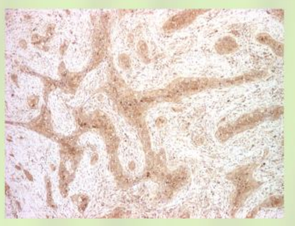

Fig.7

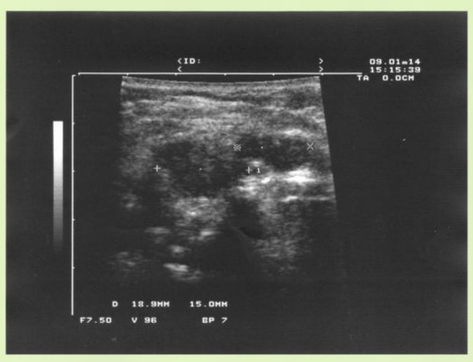

Fig.8

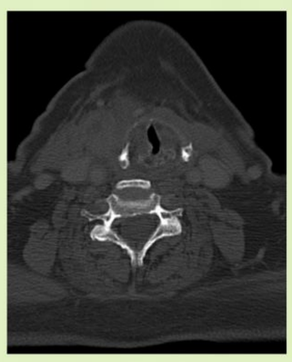

Fig.9

EVOLUTION

After thyroidectomy the patient was treated with thyroxine and one month later Paclitaxel 300mg/3 weeks and EBRT was started.

Local recurrence (three nodules up to 2cm) was detected by neck ultrasound one month later (figure 8). No masses were detected in the skull, chest, abdomen or pelvis.

Glottic edema occurred after radiation therapy; improvement was seen after high dose glucocorticoid therapy.

The patient is alive (7 months after initial diagnosis).

CONCLUSIONS

·Primary TSCC represents a diagnostic challenge and a therapeutic dilemma, given the aggressiveness of the tumor. Though surgical resection was possible in this case, chemotherapy and radiotherapy could not prevent early recurrence.

·The rarity of cases imposes a thorough and detailed evaluation of each patient. An international registry is mandatory for a better management.

·Research is needed to find new therapeutic options. EGFR expression was noticed in primary TSCC (Long JL et al 2009) but EGFR inhibitors therapy was not reported.

REFERENCES

1.Lam KY, Lo CY, Liu MC. Primary squamous – cell carcinoma of the thyroid gland: an entity with aggressive clinical behaviour and distinctive cytokeratin expression profiles. Histopatology 2001; 39: 279-86.
2.Korovin GS, Kuriloff DB, Cho H, Sobol SM. Squamous cell carcinoma of the thyroid: a diagnostic dilemma. Ann Otol Rhinol Laryngol 1989; 98:59-65.
3.Katoh R, Sakamoto S, Kasai N, Yagawa K. Squamous differentiation in thyroid carcinoma. With special reference to histogenesis of squamous cell carcinoma of the thyroid. Acta Pathol Jpn 1989; 39: 306-12.
4.Fassan M, Pennelli G, Pelizzo MR, Rugge M. Primary squamous cell carcinoma of the thyroid: immunohistochemical profile and literature review. Tumori 2007; 93: 518-21.
5.Syed MI, Stewart M, Syed S, Dahill S, Adams C, McLellan DR, Clark LJ. Squamous cell carcinoma of the thyroid gland: primary or secondary disease. J Laryngol Otol 2011; 125: 3-9.
6.Zhang YX, Zhang B, Wu YH, Liu WS, Liu SY, Gao L, Xu ZG, Tang PZ. Primary squamous cell carcinoma of the thyroid: retrospective analysis of 28 cases. Zhonghua Er Bi Yan Hou Tou Jing Wai Ke Za Zhi 2013;48(2):143-7.
7.Long JL, Strocker AM, Wang MB, Blackwell KE. EGFR expression in primary squamous cell carcinoma of the thyroid. Laryngoscope 2009; 119: 89-90.