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Basaloid squamous cell carcinoma of the larynx: case report

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ABSTRACT

Basaloid squamous cell carcinoma is a rare variant of squamous cell carcinoma that most often occurs in the upper aerodigestive tract. This type of tumor has an aggressive behavior and usually is diagnosed in the advanced stage. The diagnosis of basaloid squamous cell carcinoma is rather difficult and is based on histopathological and immunohistochemical examination. We report a case of laryngeal basaloid squamous cell carcinoma diagnosed by histological examination of an excisional biopsy specimen. The patient was a 57-year old female with a 3 months-history hoarseness and odynophagia. The histopathological aspect was strongly suggestive for BSCC. Immunohistochemical examination has been done using a panel of biomarkers in order to confirm our initial diagnosis. The tumor nests were positive for squamous epithelial marker cytokeratin 34βE12, AE1/AE3, CK 19 and also p53 and negative for carcinoembryonic antigen (CEA), vimentin and for neuroendocrine markers. Ki-67 marker was positive in 60% of the tumoral cells. Based on histopathological and immunohistochemical findings, the tumor was diagnosed as basaloid squamous cell carcinoma.

Keywords: basaloid; squamous cell carcinoma; larynx.

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Introduction

Basaloid squamous cell carcinoma (BSCC) is a rare, high-grade variant of squamous cell carcinoma (SCC) and it was first described by Wain et al. in 1986 as a tumor with an aggressive behavior [1]. In 1991, World Health Organization included this tumor in the revised classification of the upper respiratory tract and ear [2]. The tumor has a predilection for cervico-facial region, but can appear in different locations like esophagus, lung, thymus, anus and cervix uteri [3]. In the upper aero-digestive tract, the most affected are hypopharynx (piriform sinus), larynx (supraglottic) and palatine tonsils [4]. Other less common sites are sinonasal tract, trachea and nasopharynx [5]. Symptoms depend on the site of occurrence, and relative to laryngeal symptoms include hoarseness, dysphagia, odynophagia or a neck mass. The excessive alcohol and/or tobacco use are the most incriminated etiologic factors. There are studies that indicate the presence of Human Papilloma Virus (HPV) in association with BSCC, especially those originating from tonsillar epithelium [4]. BSCC is characterized histologically by nests of basal-type squamous tumoral cells that classically have central necrosis [6]. The tumor cells have pleomorphic, hyperchromatic nuclei, scanty cytoplasm and increased mitotic activity. May be present peripheral nuclear palisading. This

malign neoplasm can be associated with a dysplastic squamous epithelium, in-situ SCC and/or invasive squamous cell carcinoma [4]. Immunohistochemistry plays an important role in establishing the diagnosis. Among immunohistochemical markers, a particular significance for basaloid type of squamous cell carcinoma seems to have keratin 34 β E12 [7]. In addition, p63 shows diffuse positivity in tumoral cells and helps to differentiate basaloid squamous carcinoma from adenoid cystic carcinoma [8]. Rodriguez et al performed immunostaining using p 53, ki-67 and E-cadherin and found overexpression of ki-67 and p 53 and low expression of E-cadherin, which could be related to the aggressiveness of the disease and its poor prognosis [9]. Ferlito et al showed that, for this aggressive tumor, the recommended treatment is radical surgical excision with neck dissection and adjuvant radiotherapy, followed by chemotherapy if distant metastases were found. The estimated 5-year survival is around 17,5% [10]. Since the first cases were described by Wain et al., in 1986, a study from 2012 evaluated one hundred cases of laryngeal BSCC [11] and a study from 2014 reported 13 cases [6]. We would like to report a case of laryngeal basaloid squamous cell carcinoma diagnosed in our Clinical Service of Pathology, Emergency County Hospital “Sf. Apostol Andrei” Constanta in 2014.

Material and methods

A 59-year-old woman, smoker of 25 cigarettes/day, who denies alcohol use, was evaluate in the Department of Otorhinolaryngology of Emergency County Hospital of Constanta, for 3 moths-history of hoarseness and odynophagia. All vital signs and laboratory tests were within normal range. Indirect laryngoscopy revealed an ulceroreophytic mass involving epiglottis (laryngeal face) and right vocal fold. There was a palpable lymph node in the submandibular right side of the neck. A biopsy was performed by fibro-optic endoscopic exam (laryngoscopy) in the Department of

Otorhinolaryngology of Emergency County Hospital of Constanta. The lymph node was also removed. The specimens was fixed in 10% formalin and paraffin-embedded. The sections were first stained with Hematoxylin–Eosin and then microscopic images were taken with a Nikon camera using a Nikon Eclipse E600 Microscope. Macroscopic examination revealed the presence of five small fragments with variable diameters, which measured overall 2,5/1,5/0,7 cm, tan-white-colored, with hard consistency. The lymph node was 0,7 cm diameter. Microscopic aspect was highly suggestive for BSCC of the larynx. The lymph node examination showed BSCC invasion. Immunohistochemistry (IHC) was performed, using a panel of biomarkers in order to established the final diagnosis. The patient was treated with chemotherapy and radiotherapy after surgery (the patient underwent total laryngectomy) and had a good clinical evolution after 3 months of medical follow-up.

Results

Microscopic examination showed tumoral cells arranged in nests of basaloid cells. Some of the tumoral nests (usually the larger ones) had also central necrosis (Figure 1).

Figure 1 - Islands of tumoral basaloid cells with central necrosis (ob. x10).

Figure 2 - Nest of tumoral cells showing peripheral palisading (ob. x10).

At the edge of the nests, cells showed nuclear palisading (Figure 2). The basaloid cells had hyperchromatic nuclei and a high nuclear to cytoplasmic ratio. There were lots of mitotic figures and atypical nuclei. Tumor was not seemed to arrive from the surface epithelium which was focally dysplastic. The lymph node presented with tumoral invasion (basaloid squamous islands with necrosis) (Figure 3).

Figure 3 - Lymph node with invasion of BSCC (ob. x10)

The immunoprofile of this tumor showed diffuse positive staining for squamous epithelial marker 34 β E12, AE1/AE3 (Figure 4), CK 19 and P53

(Figure 5).

Figure 4 - 34 β E12-marker; intense positive in membrane and cytoplasm of the tumoral cells (ob. x10)

CEA was negative in tumoral cell, but positive in the epithelium. Ki67 was positive in approximately 60% of tumoral cells (Figure 6). Based on histopathological and immunohistochemical findings, the tumor was diagnosed as basaloid squamous cell carcinoma.

Figure 5 - P 53-marker – nuclear, positive diffuse in tumoral cells (ob. x10)

Figure 6 - Ki-67 marker, 60% positive in tumoral cells (ob. x10)

Discussions

BSCC counts less than 1% of laryngeal carcinoma. Its pathological features and non-specific macroscopic aspects make the diagnosis difficult [12]. The most characteristic histopathological aspects of the tumor are the presence of tumoral basaloid cells with nests architecture and classically with central necrosis and areas of squamous differentiation. The tumoral cells are characterized by nuclear pleomorphism, lot of mitosis, scanty cytoplasm and nuclear palisading at the edges of tumor nests [1,4,13]. All these microscopic features were found in our case. In the majority of published series of the laryngeal BSCC, most of the cases appears in male, sixth-seventh decade of life, with a history of smoking and alcohol [6]. Our patient is female, but in her sixth decade of life and having smoking as an incriminated etiological factor. Alkan et al [12] showed the supraglottic predominance which is present in our patient too. Immunohistochemical studies are reported to be useful for differential diagnosis [8,9,16]. The differential diagnosis of BSCC includes adenoid cystic carcinoma (ACC),

small cell undifferentiated carcinoma, basal cell adenocarcinoma (BCAC), adenosquamous carcinoma, and basosquamous carcinoma [17]. Both the cytological and histomorphological characteristics of the solid type of ACC are quite similar to those of BSCC [14]. Emanuel P et al [8] found that the p63 staining pattern of BSCC is different from the staining pattern in ACC. While BSCC displayed diffuse p63 positively, with staining of nearly 100% of tumor cells, ACC showed focal positivity for p63. This would represent a complete failure of the normal program of squamous differentiation [8]. Mane et al revealed the intense expression of p53 in all basaloid malignancies and this was also noted in our case [18]. Madur BP and Jambhekar NA showed that BSCC was negative for vimentin and S-100 [15].

Morice WG and Ferreiro JA observed more than 95% of BSCC cases were immunoreactive with anti-high-molecular-weight cytokeratin antibody 34βE12. In cases of SCC, cytokeratin 34βE12 is always negative [16].

The aggressive biologic behavior of the BSCC it is characterized by a high incidence of the cervical lymph node metastasis (found in our case) and distant metastasis – six times higher risk compared to usual type of SCC [19].

Conclusions

Because of its rarity we report an additional case of BSCC of the larynx, typically presented with latero-cervical lymph node metastasis.

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