Gingival angiosarcoma: histopathologic and immunohistochemical study

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Abstract

Angiosarcomas of the head and neck are rare tumors, the intra-oral localization being considered exceptionally in the specialty literature. The diagnosis of this kind of tumor in gingival location is difficult, both to the rarity of this lesion at this site, and to the various histopathological aspects. We present the case of 70 years old male patient clinically diagnosed with tumor of the alveolar crest of mandible, which, histopathologically, associated areas of predominant vascular proliferation, with areas of carcinoma and sarcoma. Immunohistochemical, the tumor was investigated for antibodies which prove the origin of proliferating cells:CD31, AE1–AE3 and vimentin.

Keywords: angiosarcoma, histopathology, immunohistochemistry.

Introduction

Angiosarcoma is a rare malign neoplasm of the vascular endothelium, from the sarcomas of the soft tissues is one of the rarely neoplasia, its frequency being below 1%.

The tumor can occur at any age, especially to the elderly people and affects predominantly males. Although the majority of the sarcomas appear deeply in the tissues, angiosarcomata appear on tegument and in the superficial soft tissues [1, 2].

Frequently, they are preceded by long-standing lymphoedema. Other aggressions linked with this neoplasm are irradiation of the area for other lesions, trauma, the presence of foreign bodies (steel, plastic, surgical sponge, osseous wax) immune system deficiency and the preexistent lesions: haemangioma and lymphangioma.

50% of the angiosarcomata of the skin occur in the head or neck region- especially at the level of scalp or face. The predilection site of occurrence in oral mucosa is tongue and lips. The tumors with such localization are not associated with lymphaedema.

Although, these tumors reproduce the normal endothelium features, histopathologically their appearance varies greatly, from the well-differentiated forms, similar with haemangiomas, to low differentiated forms- heavy to differentiate from the carcinomas or achromatic melanomas.

However, it was noted the fact that, in the electron microscopy, the vascular characteristics were preserved even in the low-differentiated forms. Among this characteristics are the close relation between the neoplastic cells and red cells that are disposed between or in cytoplasm of the neoplastic cells, a limited outlining of lumina by basal membrane, tight intercellular jonctions and occasional presence of filaments in their cytoplasm [3]. In the literature exist only a reduced number of cytogenic studies concerning the angiosarcomas, the more frequent chromosomal anomalies being hypodyploidy and hyperdiploidy [4].

The most frequent anomaly consist in increasing of chromosome numbers in 5, 8 and 20 pairs and chromosome losing in 7 and 22 pairs.

Angiosarcoma is considered aggressive neoplasm, with unfavorable prognosis because of the high rate of recidivate, the potential to metastasize and the increase mortality. The recurrences and the metastasis occur around 2 years from the diagnosis, the 5 years rate of mortality is over 20%. The mean surviving duration is 15–24 month from the moment of diagnosis [5, 6].

Material and methods

The surgical piece came from the O.M.F. Clinic. The crease alveolar tumor was processed by usual histopathologic technique, with paraffin inclusion and staining with haematoxylin-eosin.

At the same time we investigated immunohisto-chemical (LSAB 2) the tumor for CD31, AE1–AE3 and vimentin.

Results and discussions

The 70 years old male was clinically diagnosed with tumor of the alveolar crest of mandible. The surgical piece was lilaceous, vague delimitated, nodular mass, with undefined limits and maximum diameter of 4 cm. On section, the tumor was soft, white-gray color, with disseminated areas of hemorrhage and necrosis.

The histological study, made on serial sections revealed different microscopic aspects which globally achieve a pleomorphic aspect of this lesion. Thus, we observed large areas with distinctive vascular lumens, sometimes anastomosed, with varied diameters and shapes, separated by a fibro-collagen stroma with frequent areas of hyalinization.

The vascular structures had shape of zones with hardly visible lumen or like broad vascular spaces, frequently full with erythrocytes. Other times the vessels had thickening walls and narrow lumen full with homogenous hyaline eosinophilic material.

The endothelium that lined the vessels was flattened, almost like the normal epithelium, but sometimes with big, hyperchromatic, crowded nuclei, with mitotic activity (Figures 1 and 2).

In some areas the atypical endothelia achieve heterogeneous intraluminal papillary proliferations. These aspects suggested the existence of one vascular tumor that, despite the relative benign aspect of the vascular proliferation, had imprecise limits, with deep situated vessels, with dissecting character, lined by endothelia with areas of nuclear atypia.

In other areas the tumor was almost exclusive composed by a proliferation of neoplastic cells resembling the one from the low differentiated carcinomas. The neoplastic cells had round or polygonal shape, were tall, with intense eosinophilic cytoplasm and round-ovoid polymorphous nuclei with frequent atypical mitosis.

The aspect of the cells simulated the aspect of the epithelial-like cells. Based on this, the diagnosis of angiosarcoma – epithelial-like form was made.

In the interior part of the neoplastic proliferation were present blood vessels, mostly with aspect of small lumen, or branched vascular spaces, delimitated by atypical endothelia, containing some red cells (Figures 3 and 4).

Other zones of the tumor had the aspect of a sarcoma-like proliferation, being composed by elongated cells, with fascicular disposition, like the aspect from the fibrosarcoma. Cytoplasm of the neoplastic cells was eosinophilic; the nuclei were ovoid, polymorphous with numerous, frequent atypical mitosis (Figure 5).

Also, in this area they were numerous vascular channels, with varied caliber and anastomosis. The vascular structures from the periphery of the proliferation contained discrete papillary structures. Areas of necrosis and hemorrhage and haemosyderinic infiltrates were present in the tumoral areas with predominance of the cellular proliferation, with carcinoma-like or sarcoma-like aspect.

The immunohistochemical study concerned the origin of the neoplastic proliferation – both the vascular and the carcinoma-like and sarcoma-like aspects. Immunostaining for CD31 was intense positive on large zone in different areas of the tumor, indifferently of the morphology of the neoplastic cells both in the cells that outline the vascular structures and between solid neoplastic areas of proliferation (Figures 6 and 7).

The staining for AE1–AE3 was only positive focal, in the tumoral areas corresponding to the carcinoma like proliferation and the expression for vimentin was negative (Figure 8).

The angiosarcomas of the oral cavity are rare tumors. It is considered that fewer than 8% from the angiosarcomas of neck and head are developed in structures of the oral cavity, they representing only 4% of the tumors with such localization [7].

In many cases the tumors are developing at the level of mandible, among the rare sites noted in this area are the maxilla, parotid gland, lips, tongue, the palate and anthrium [5, 6]. In the same context, in the literature are mentioned very rare cases of angiosarcomas located at the level of the gingival mucosa [8–11].

Angiosarcomas developed at the level of the oral cavity are found at people over 60 years, similar with the case meet by us [9, 11]. Grossly the tumors are described like nodular unique or multiple formations, with reddish-blue color, hemorrhagic, rarely ulcerated, sometimes with micro cystic aspect on section, without them aspect suggesting the malign nature of the proliferation. Histopathologically, the aspect can be very varied, from the well differentiated forms with formation of vessels lined by atypical endothelia, to low differentiated forms, composed by proliferation of epithelial-like cells, with polymorphous, hyper chromatic nuclei, with frequent atypical mitosis.

Our case present, together with areas of predominant vascular proliferation, areas with carcinoma-like or sarcoma-like allure, that created problems of differential diagnosis between one angiosarcoma, a low differentiated carcinoma, an achromic melanoma, or sarcomata developed more frequent in this zone.

Associations of these histological aspects determined us to investigate the tumor from the immunohistochemical point of view, using some antibodies addressed to the proliferated structures. We pursue the CD31 expression, the AE1-AE3 cytokeratins cocktail and vimentin in neoplastic cells.

The intense CD31 immunoexpresion, together with a focal character for the AE1–AE3, permitted us to establish the vascular origin of the tumor. The focal positive AE1-AE3 reaction excluded a carcinomatous proliferation and negative reaction to vimentin of neoplastic cells from sarcomatoid areas excluded sarcoma with this location. Similar aspects are noted in the specialty literature, considering that this neoplasia is positive to a lot of vascular markers such as: CD31, CD34 and Factor 8 [5, 8, 9].

The positivity for cytokeratins and vimentin is noted only inconstantly and with focal character consider that the utilization of CD31 and CD34 is sufficient for the identification of the majority of angiosarcomas, including the low differentiated forms, that is the best way to tackle of the diagnosis for these neoplasms.

The CD34 is the antigen of hematopoietic stem cells, being express by many angiosarcomas and Kaposi sarcomas, and also by many soft tissues sarcomas such as epithelioid sarcoma. The literature data specify that CD34 is an adhesion molecule between endothelial cells and platelets and had a high sensibility and specificity for endothelial differentiation.

Conclusions

We consider useful the presentation of this case of epithelial-like angiosarcoma of the gum because of the rarity of this kind of tumor at this site, the bad prognostic, and the problems of differential diagnosis imposed by this tumor.

The association of areas of cellular proliferation with carcinoma-like and sarcomata-like allure, together with predominant vascular proliferation, oriented the diagnosis to a vascular malign tumor.

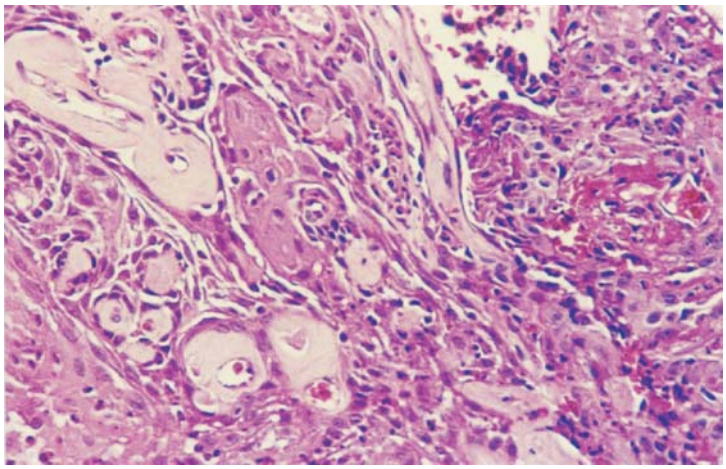

Figure 1 – ***Angiosarcoma, angioma-like area with hyalinization (HE, ob. ×10)***

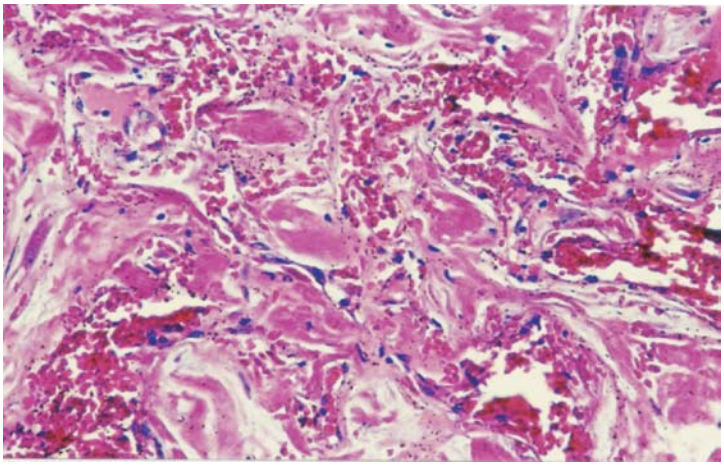

Figure 2 – ***Angiosarcoma, angioma-like area with hyalinization (HE, ob. ×10)***

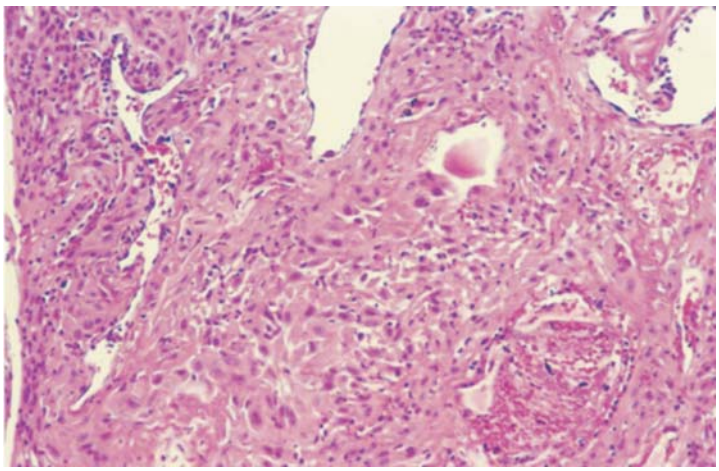

Figure 3 – ***Angiosarcoma, carcinoma-like area (HE, ob. ×10)***

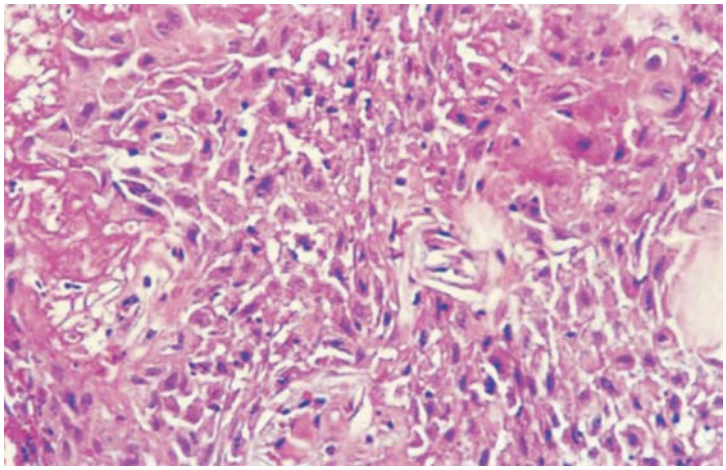

Figure 4 – ***Angiosarcoma, carcinoma-like area (HE, ob. ×20)***

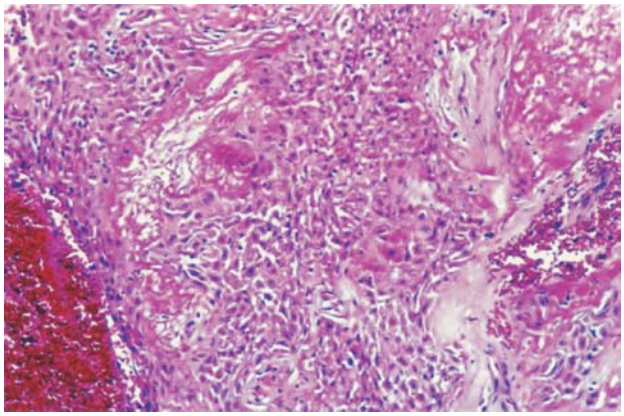

Figure 5 – ***Angiosarcoma, sarcoma-like area (HE, ob. ×10)***

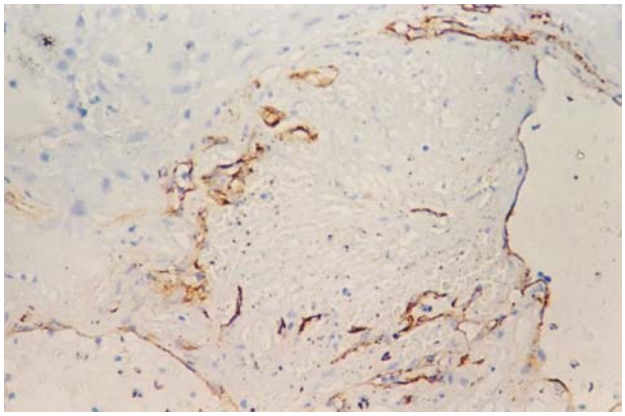

Figure 6 – ***Angiosarcoma (CD31, ob. ×10)***

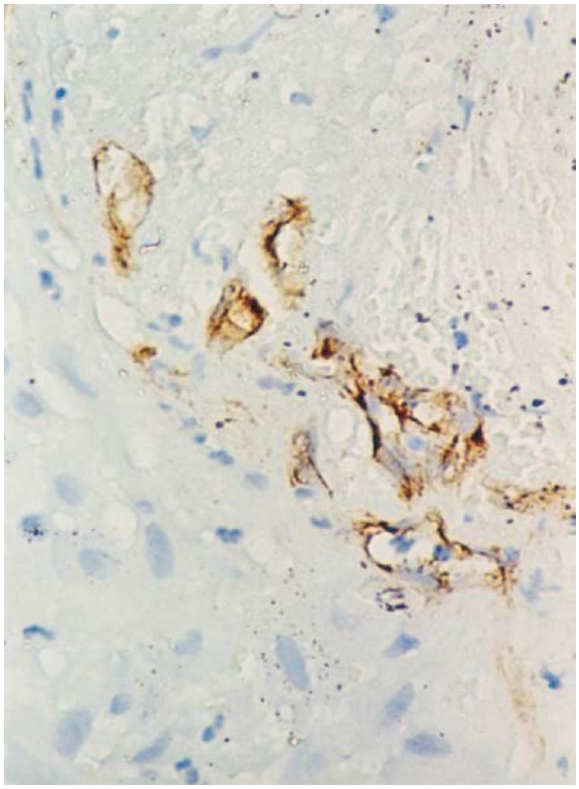

Figure 7 – ***Angiosarcoma (CD31, ob. ×20)***

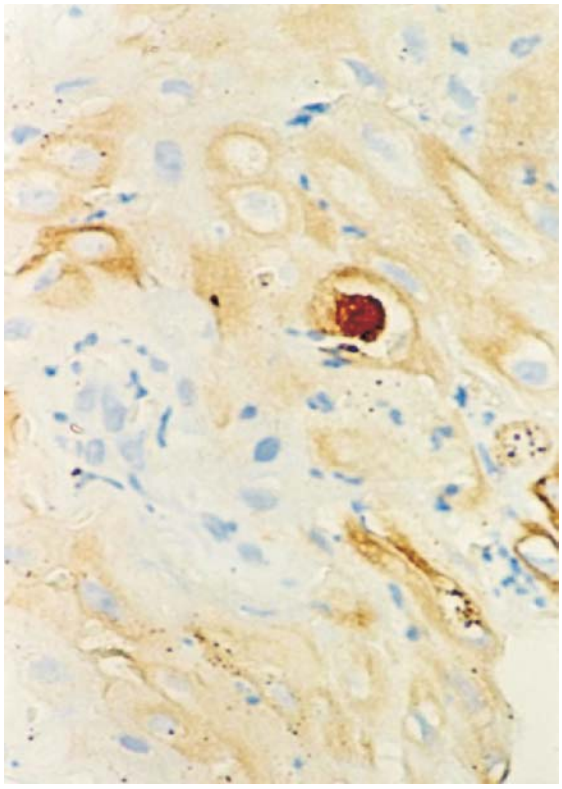

Figure 9 – ***Angiosarcoma (AE1-AE3, ob. ×20)***

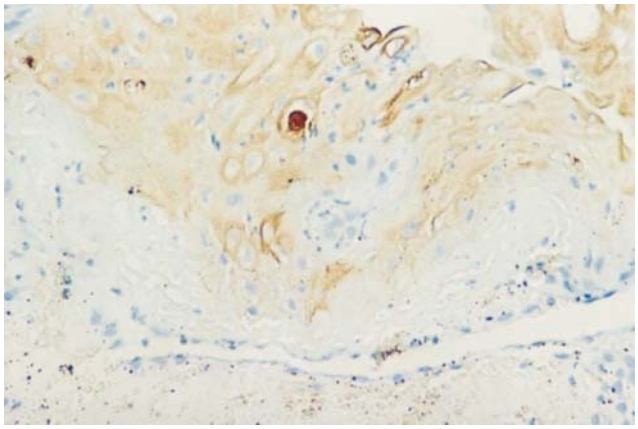

Figure 8 – ***Angiosarcoma (AE1-AE3, ob. ×10)***

The high intensity of the immuno-expression and on large area of the vascular proliferation factors CD31 and CD34, together with a focal immunostaining for the AE1–AE3 confirms the diagnosis of angiosarcoma.

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