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DOI: 10.2478/rjr-2021-0029

Romanian Journal of Rhinology, Volume 11, No. 44, October - December 2021

ORIGINAL STUDY

Primary soft palate biphasic synovial sarcoma - case report and literature review

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ABSTRACT

BACKGROUND. Synovial sarcomas of the soft tissue are a particular type of sarcomas that rarely appear in the head and neck region.
CASE REPORT AND COMMENTS. We present the case of a 27-year-old patient diagnosed in 2017 with soft palate biphasic synovial sarcoma who presented with recurrent microepistaxis, nasal obstruction, left cephalalgia and aural fullness in the left ear. The clinical examination showed a tumor with approximately 4/6 cm in diameter, covered with sero-sanguinolent secretions, pulsating in nature, completely obstructing the left choana. The surgical treatment consisted of complete removal of the tumor under endoscopic guidance with electrocauterization of the insertion area, without further postoperative radiotherapy. The histopathological aspect was suggestive for pleomorphic sarcoma, poorly differentiated, confirming the local recurrence of the tumor. The patient also presented lung metastasis from undifferentiated malignant tumor.
CONCLUSION. The particularity of this case is represented by the extremely rare occurrence of synovial sarcoma in the head and neck region, especially at the level of the soft palate. Complete resection of the tumor with negative margins represent the mainstay of treatment, associated with adjuvant radiotherapy, with an important role in improving disease-specific survival.
KEYWORDS: biphasic synovial sarcoma, soft palate, microepistaxis, local recurrence.

INTRODUCTION

Synovial sarcoma of the soft palate is a rare tumor, first described in the medical literature in 1978 in a 19-year-old male and in 1981 in a 9-year-old boy, both cases being described as monophasic synovial sarcoma[1,2].

Synovial sarcoma is considered a high-grade tumor with poor prognosis, that classically develops in limbs, whose treatment involves surgical removal with wide resection margins associated with adjuvant radiotherapy[3-5]. The role of chemotherapy in adults is not well established[5].

Despite the tumor's name, synovial sarcoma originates rather from pluripotent mesenchymal cells than mature synovial cells[6]. In comparison to synovial sarcoma with different locations, head and neck synovial sarcoma is considered to have bigger potential of metastasis both regional and distant, primarily by haematogenous dissemination[7].

Under light-microscope, synovial sarcoma is characterized by the presence of spindle cells with a variable epithelial differentiation. Based on the degree of epithelial differentiation, they can be classified in two main subtypes: monophasic or biphasic. The monophasic synovial sarcoma is the most common type, described as having monomorphic spindle cells organized in long, intersecting fascicles[8]. The biphasic type is represented by well-developed glandular epithelial structures in adjunction to the spindle cell component[9]. Rare subtypes of synovial sarcomas are also described, such as: poorly differentiated, monophasic epithelial, myxoid and ossifying[10].

A recent review conducted by Stanbouly et al. concluded that, out of 243 cases reported since 1950 until 2020, the most frequent site of development of the head and neck synovial sarcomas was

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Received for publication: August 18, 2021 / **Accepted:** September 9, 2021

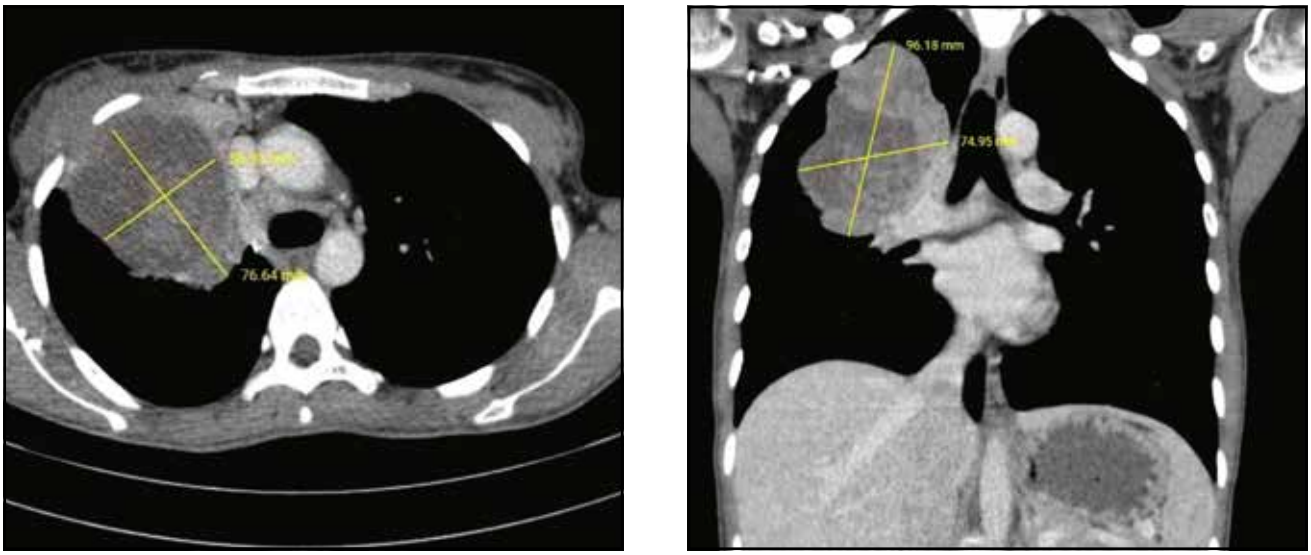

Figure 1. CT scan of the thorax and abdomen (axial and coronal slices): multiple mediastinal lymph nodes and a voluminous lung formation in the right superior pulmonary lobe, with an irregular contour (axial slice and coronal slices); 2 cystic-like hepatic lesions developed in segments IV and VIII (coronal slice).

the neck (43 cases, representing 17.7%) followed by oral lesion (28 cases, representing 11.5%)[11].

Synovial sarcoma was described at the level of the hard palate in only 3 cases[12,13] and only 2 cases involved the soft palate[1,2].

Synovial sarcomas developed in the head and neck region are associated with a better overall survival and cancer-specific survival than those arising in other areas[5,6]. The same observation was made in case of the biphasic type in comparison to the monophasic type[5].

We present the first case of a biphasic synovial sarcoma involving the soft palate. In the literature, there is no case previously reported of this type of tumor with this specific location. The two cases of synovial sarcomas presented in the literature, arising from the soft palate as a primary site, are described having only a spindle cell component.

CASE REPORT

We present the case of a 27-year-old female patient, previously diagnosed in 2017 with soft palate synovial sarcoma for which she underwent two surgical interventions, who presented to our ENT Department with recurrent microepistaxis, progressive nasal obstruction, left cephalalgia and aural fullness in the left ear, symptomatology present for about 3 weeks. Prior to hospitalization, the patient performed a CT scan of the thorax and abdomen that revealed multiple mediastinal lymph nodes and a voluminous lung formation in the right superior pulmonary lobe, with an irregular contour, in progression from the previous examination, with greater involvement of the pleura, aggravated bronchial stenosis, and an apparent involvement of the superior lobar bronchus (excavating process) (Figure 1). Two cystic-like hepatic lesions developed in segments IV and VIII were also visible on the CT scan (Figure 1).

Patient history

The first clinical record dates from August 2016 when, after a head and neck CT scan that revealed a tumor at the level of the soft palate of 30/20/30mm, the patient had a complete resection of the tumor in another ENT Department, that raised the suspicion of a rhabdomyosarcoma based on the immunohistochemistry aspect (CD99-, S100-, VIN+, EMA+). One year after the surgery, the patient was reevaluated and a local recurrence was noticed. The relapsing tumor was surgically removed and further immunochemistry testing was performed, which identified biphasic synovial sarcoma of the soft palate with minor epithelial component. Immunohistochemistry revealed positive focal epithelial markers (EMA), positive CD99 and CD34, BCL2 intensely positive, Ki67 positive in 15% of neoplastic cells, and negative marker for CD10, desmin, S100, HHF35, TTF1.

At that moment, the patient refused to undergo radiotherapy or chemotherapy. In 2017, the surgical margins were appreciated to be tumor free, and no lung, hepatic or bone active metabolic lesions were present at the PET-CT scan. Only an active metabolic lesion was described at the level of the left jugulodigastric lymph node, which had no tumor cells at the histopathologic examination.

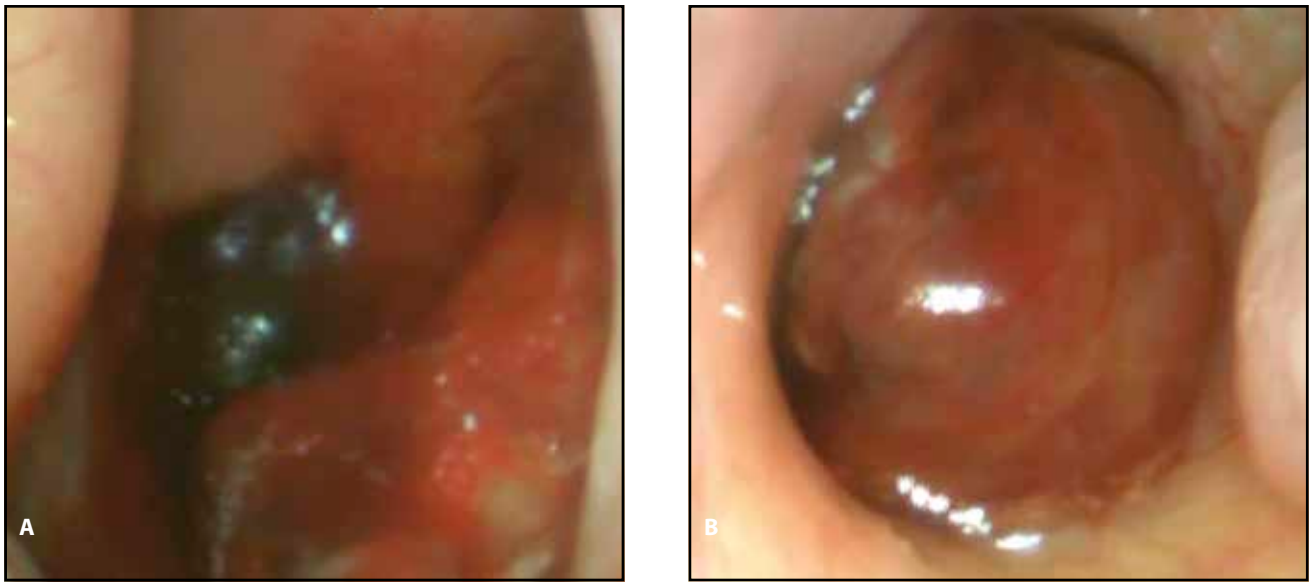

Figure 2. Videolaryngoscopy: A. Aspect of the right choanal arch, posterior pharyngeal wall covered in sero-sanguinolent secretions. B. Radish tumor completely obstructing the left choana.

She was monitored periodically by her treating physician, and she was admitted in our ENT Department in May 2021.

Clinical and paraclinical evaluation

The patient was underweight, with a BMI of 16.2, without palpable lymph nodes in the head and neck region, symmetric chest walls, no wheezing or rhonchi appreciated, with SpO2 of 97-98%, regular heartbeat, no murmurs or rubs, no jugular venous distention, no cyanosis, clubbing or oedema.

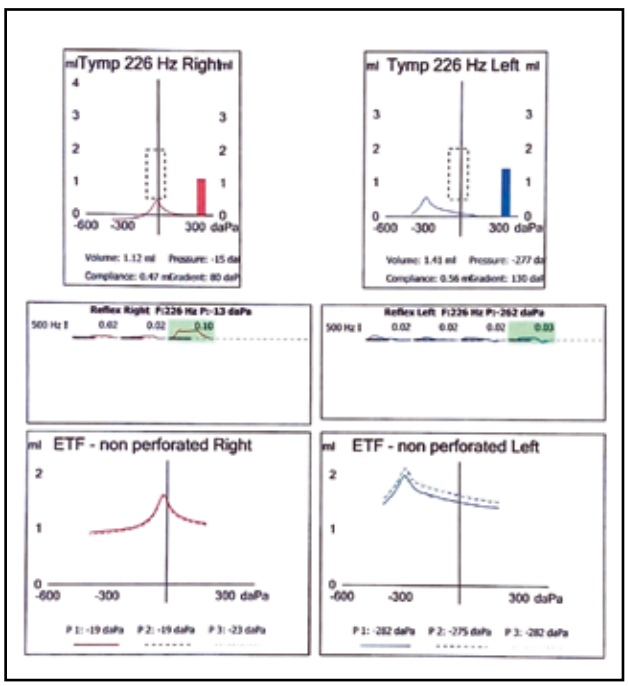

Figure 3. Tympanogram and tubal manometry results: type A tympanogram on the right ear (red), type C tympanogram on the left year (blue) with Eustachian tube dysfunction.

The ENT evaluation correlated with the videolaryngoscopy revealed a hyperaemic tumor, with approximately 4/6 cm in diameter, covered with sero-sanguinolent secretions, pulsating in nature, completely obstructing the left choana, mobile during phonation, with apparent origin on the superior (nasal) surface of the left soft palate; the posterior pharyngeal wall was covered in sero-sanguinolent secretions (Figure 2).

The tympanic membrane was of normal aspect, with present cone shaped light reflection.

Taking in consideration the symptomatology and the personal pathological history of the patient, extensive investigations were made. The pure-tone audiometry, tympanometry and tubal manometry revealed a normal hearing bilaterally, a type C tympanogram on the left ear suggestive for a left Eustachian tube dysfunction and a type A on the right ear (Figure 3).

The patient underwent a head and neck native and contrast enhanced angio-MRI (Figure 4), which revealed a "space-replacing process, vegetative, anterior to the tubal torus of the left side, with obstruction of the tubal pore; axial dimension of 18/20mm and 17 mm cranio-caudal; irregular contour; heterogeneous structure". The tumor was bigger than the previous examination from 2019 (where it was 14/15/17mm). By volume, it obstructed the left choana, without extending into the nasal fossa, and there was no evidence of an

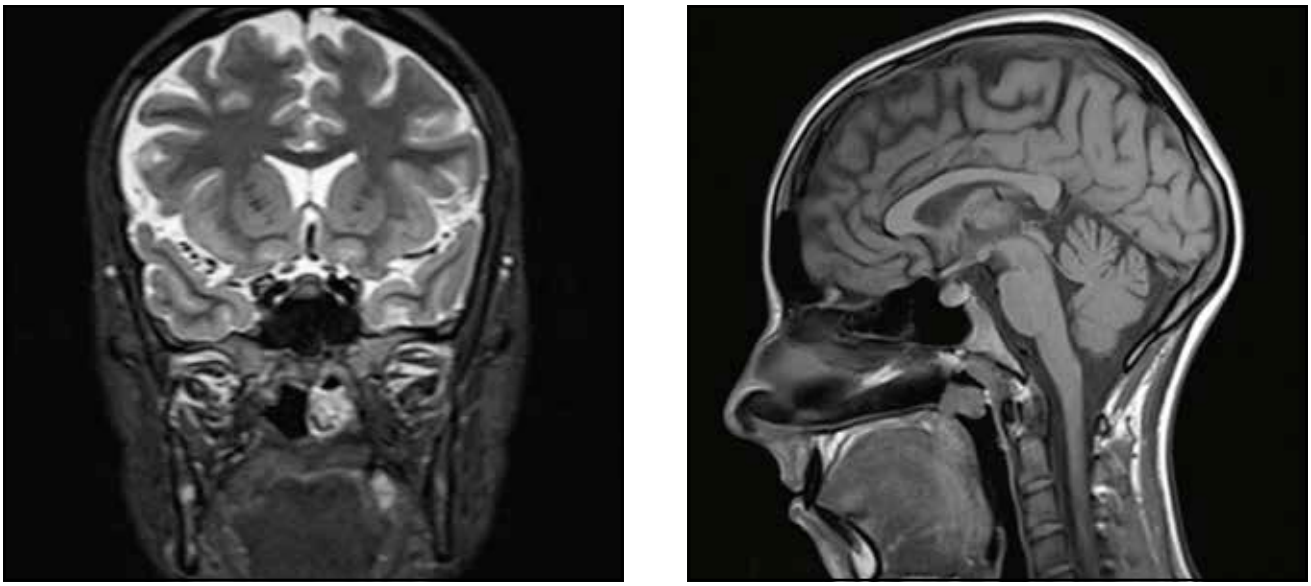

Figure 4. Head and neck angio-MRI (sagittal and coronal slices): space-replacing process, vegetative, anterior to the tubal torus of the left side, with obstruction of the tubal pore; axial dimension of 18/20mm and 17 mm craniocaudally; irregular contour; heterogeneous structure.

important vascular supply of the tumor.

During the hospitalization, the patient received intravenous treatment with antibiotic, corticosteroids, nonsteroidal anti-inflammatory drugs and analgesics periprocedurally. The surgical treatment consisted of complete removal of the tumor under endoscopic guidance with electrocauterization of the insertion area, followed by histopathological analysis of the tissue.

The histopathologic examination was suggestive for a pleomorphic sarcoma, most likely poorly differentiated G3 (tumor differentiation 3, tumor n5crosis 2, mitotic activity 3), confirming the local recurrence of the tumor (Figure 5).

The patient was monitored for 5 days postoperatively; during this time, parenteral treatment was administered. The evolution after the removal of the soft palate tumor was favourable, the endoscopic evaluation performed 2 days after the surgery indicating no residual tumor mass or other

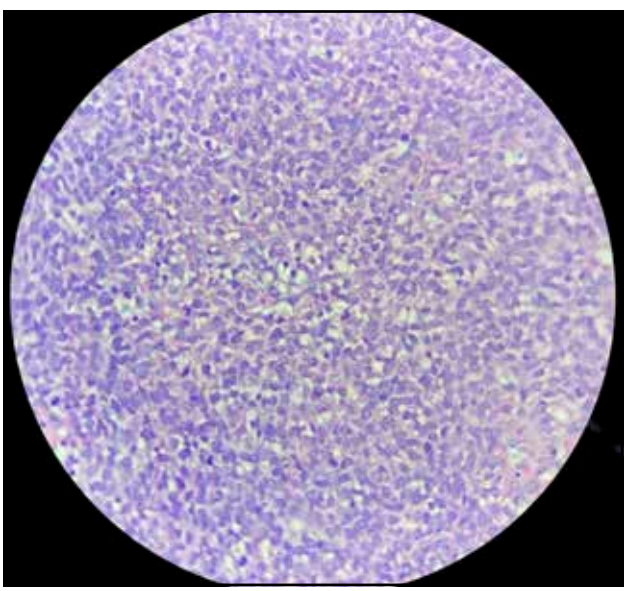

Figure 5. Pattern in plage, bundles and alveolar structures, consisting of round and elongated cells with vesicular nuclei with intensely nucleolis, 21 mitoses/10 HPF

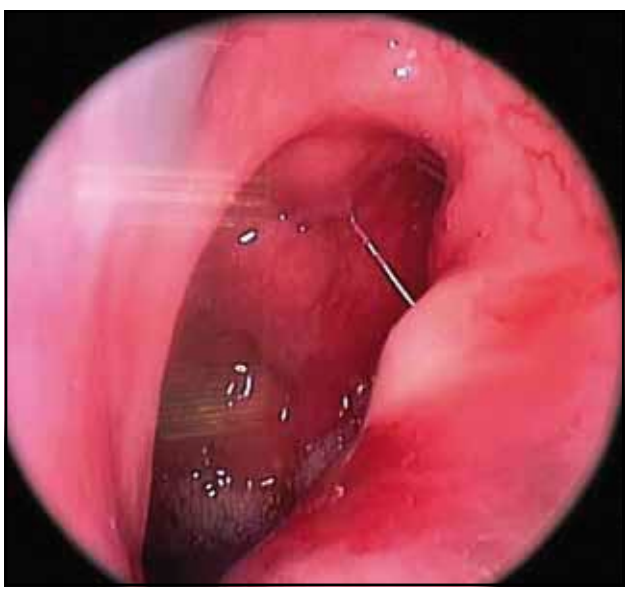

Figure 6. Nasal endoscopic examination: no residual tumor mass or other infecto-inflammatory lesions 2 days postoperatively.

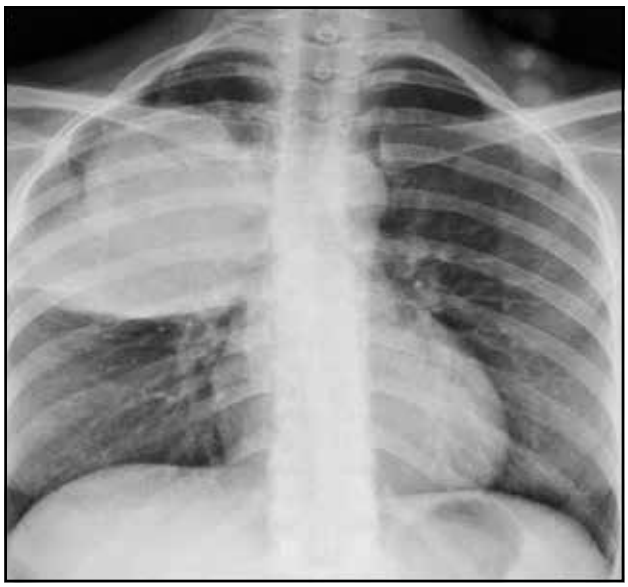

Figure 7. Chest X-ray 24 hours after the pulmonary biopsy: opacification located in the right superior pulmonary lobe, with no other local complications.

infecto-inflammatory lesions (Figure 6).

The patient was transferred to the Thoracic Surgery Department in order to perform a CT-guided biopsy of the tumor localized in the right superior pulmonary lobe. After the biopsy, she was monitored for 24 hours, and the control chest X-ray revealed no local complications (Figure 7). The histopathological aspect was suggestive for the diagnosis of lung metastasis from undifferentiated malignant tumor.

DISCUSSIONS

Synovial sarcomas (SS) of the soft tissue are a particular type of sarcomas, that rarely appear in the head and neck region. Synovial sarcomas constitute less than 0.1% of all neoplasms developed in the head and neck region, and only 3-10% of them have as primary site this region. The demographic studies suggest there is a predilection for young and middle-aged adults[14,15]. Although the synovial sarcoma of the head and neck has similar morphologic aspect with the synovial sarcoma developed in other regions, there is increased evidence that head and neck synovial sarcomas (HNSS) are a distinct pathological entity that should be treated accordingly, studies suggesting that the tumorigenesis has a different mechanism[16].

Based on the histological aspect, synovial sarcoma can be classified as monophasic, biphasic or poorly differentiated synovial sarcoma, depending on the cellular aspect. Synovial sarcomas are considered high-grade tumors. Biphasic synovial sarcoma is characterized by proliferation of both spindle cells and epithelial cells. Similar to other SS, the diagnosis is difficult to be made purely on the histological aspect, in most cases their identification being unequivocally made using immunohistochemistry or identification of a specific chromosomal translocation t(X;18) (p11.2;q11.2)[17].

Recognition of biphasic synovial sarcoma can be hampered when the tumor develops in an unusual location. In this cases, immunohistochemical staining can be used to identify keratins or Ber-Ep4 epithelial antigen[18] in order to differentiate it from fibrosarcoma or from malignant mesothelioma[19,20].

The differential diagnosis of synovial sarcoma from other tumors using immunohistochemistry usually demonstrates positive epithelial markers (EMA) which are not observed in fibrosarcomas[21], positive CD56, CD99 [22], negative muscle-associated markers (smooth-muscle actin, desmin) and S-100 protein, which helps to differentiate it from nerve sheath tumors. Bcl-2 protein seems to be a characteristic marker for synovial sarcoma, being useful in differentiating synovial sarcoma from other spindle cell sarcomas[23].

Although some studies suggest that the HNSS is associated with a better prognosis[5], others state that head and neck synovial sarcomas are associated with poorer evolution[24]. In our case, taking into consideration that the patient had multiple metastasis, removal of the primary tumor was made in order to reduce the potential immunosuppressive state induced by the tumor, and to diminish the risk of complication and alleviate symptoms. Studies that investigated the potential benefits of cytoreductive surgery concluded that resection of the primary tumor is associated with a significant improvement of the overall survival[25-28].

Potential complications attributed to the evolution of the primary tumor include recurrent epistaxis, invasion of adjacent structures, immunosuppression, anaemia.

Anatomical sites at high risk included the following: the tensor veli palatini muscle, responsible for elevating the palate to occlude and prevent entry of food into the nasopharynx during swallowing; obstruction of the opening of Eustachian tube with secondary Eustachian tube dysfunction, frequent episodes of otitis media and hearing loss; obstruction of the nasal fossae; involvement of the pterygoid process which allows the jaw to move in a horizontal and vertical direction during mastication. The medium-risk anatomic sites include: foramen ovale, crossed by the mandibular nerve whose most essential function is the innervation of the masseter muscle; pterygopalatine fossa, crossed by the maxillary nerve, which primarily supplies sensory innervation to the middle

third of the face; hypoglossal canal, ethmoid sinus, jugular foramen[29]. The extension of the tumor to these regions can interfere with the evolution and prognosis of the disease.

The standard treatment of HNSS implies resection of the tumor with wide margins, which is not easily achieved in the head and neck region, followed by adjuvant radiotherapy. Negative surgical margins are associated with a better progression-free survival[30], while local excision is associated with early reoccurrence within the first 2 years (between 60 – 90%)[31-33]. Lymph node dissection is not routinely made if suspicion of lymph node invasion does not exist. Radiotherapy is considered to provide a better control of the disease, improving disease-specific survival[8] and 5-year local-recurrence-free survival[34].

The factors of poor prognosis for this pathology seem to be: male gender[5,35,36], age over 35 [5], tumor size (> 5 cm)[5,24], primary site (other than head and neck region)[5,27], histological type (purely epithelioid)[5], tumor grade (grade 3 and 4)[5], positive margins of resection[5,24], presence of metastases[5], Ki67 > 10%[37].

In our patient, the tumor was grade 3. Moreover, the presence of lung metastases and the refusal of performing radiotherapy or chemotherapy represent factors of poor prognosis.

CONCLUSIONS

The particularity of this case is represented by the extremely rare occurrence of synovial sarcoma in the head and neck region, especially at the level of the soft palate, and by the fact that the patient refused radiotherapy or chemotherapy, so the treatment consisted only of surgical removal of the primary tumor.

Management of this pathology is still controversial, mainly because of the absence of controlled studies that could develop treatment protocols. Complete resection of the tumor with negative margins represent the mainstay of treatment[38-42], followed by adjuvant radiotherapy that seems to have a role in improving disease-specific survival[5].

Conflict of interest: The authors declare they have no conflict of interest.

Contribution of authors: All authors equally contributed to this work.

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