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CASE REPORT

Sclerosing Rhabdomyosarcoma of the buccal mucosa: a cautionary tale

Stwardniający mięsak prążkowanokomórkowy śluzówki policzkowej – ku przestrodze

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Abstract

Rhabdomyosarcoma (RMS) is a malignant soft tissue tumour of skeletal muscle origin with a predilection for head and neck sites, including the oral cavity. Three main histologic subtypes are recognised; namely embryonal, alveolar and pleomorphic. There appears to be a newly emerging sclerosing variant which does not fit into the current classification. Here, we report an additional case of sclerosing RMS of the buccal mucosa in a 21-year-old female. We place particular emphasis on the difficulties in diagnosis of RMS affecting the oral cavity since many cases are initially misdiagnosed as infection of dental origin.

Streszczenie

Mięsak prążkowanokomórkowy (RMS) to nowotwór złośliwy tkanek miękkich wywodzący się z mięśni szkieletowych najczęściej zlokalizowany w obrębie głowy i szyi, w tym w jamie ustnej. Histologicznie rozróżniamy trzy podtypy: zarodkowy, zębodołowy i polimorficzny. Ostatnio obserwuje się pojawienie odmiany stwardniającej, której nie da się przypisać do istniejącej klasyfikacji. Opisujemy przypadek stwardniającego RMS śluzówki policzkowej u 21-letniej pacjentki. Zwracamy szczególną uwagę na trudności diagnostyczne, gdy RMS dotyczy jamy ustnej; wiele przypadków na wstępnym etapie jest błędnie diagnozowanych jako infekcje zębopochodne.

KEYWORDS:
sclerosing rhabdomyosarcoma, head and neck cancer, buccal mucosa

HASŁA INDEKSOWE:
stwardniający mięsak prążkowanokomórkowy, nowotwór głowy i szyi, śluzówka policzkowa

Introduction

Rhabdomyosarcoma (RMS) is a malignant tumour thought to arise from primitive undifferentiated mesenchymal cells.[1] It is the commonest malignant soft tissue tumour in paediatric and adolescent populations but is a relatively rare occurrence in adult populations.[2,3]

RMS in the head and neck can be divided anatomically into two separate categories; namely parameningeal and nonparameningeal. Parameningeal sites include those that are in close anatomic relationship to the meninges such as RMS of the nose, nasopharynx, paranasal sinuses, middle ear, mastoid, infratemporal fossa and pterygopalatine fossa. Nonparameningeal sites include RMS of the scalp, orbit, parotid gland, oral cavity, oropharynx and larynx.[4]

The most recently used classification system for RMS is the World Health Organisation (WHO) system which uses histologic features to describe three main subtypes; namely embryonal (encompassing the botryoid, spindle cell and anaplastic variants), alveolar (including the solid variant), and pleomorphic.[1] The embryonal

subtype, which accounts for 70% of cases, primarily affects young children, and is associated with a relatively good prognosis. The alveolar subtype (15%) is usually encountered in older children, and is associated with a worse prognosis. The rare pleomorphic subtype is usually seen in adults, and is associated with a poor prognosis.[5,6]

Interestingly, there have been recent reports of a new histologic type of RMS which does not fit into the WHO classification; namely the sclerosing variant.[7,8] Sclerosing RMS features heavily hyalinized collagenous matrix and occasional pseudovascular growth pattern.

On review of the world literature, a common feature in the management of RMS affecting the oral cavity is an initial misdiagnosis of an infective cause, such as an abscess.[9-11] Similar diagnostic difficulties occurred in the reported case; hence, we hope to remind clinicians of an important clinical lesson in the diagnosis of similar presentations.

Here, we report a rare case of sclerosing RMS occuring in the right buccal space in a 21-year-old female. A high index of suspicion is required to make the diagnosis; such cases are often misdiagnosed as buccal space abscesses early on in their management.

Case Report

A 21-year-old Somalian female patient presented at our Maxillofacial Unit at University College Hospital as an urgent referral via her General Dental Practitioner (GDP). She had previously had a carious lower right second molar removed under sedation by her GDP in early June 2014. She had no significant past medical or family history and was a lifelong non-smoker and non-drinker. Despite the extraction of her carious tooth, she suffered persistent problems with painful recurrent swelling in her right buccal area. There was no improvement with a one-week course of amoxicillin prescribed by her GDP prompting the referral to our Maxillofacial Unit. On examination, there was a large right-sided extra-oral facial swelling of the buccal space with associated fullness of the buccal sulcus intra-orally. There was no imminent airway compromise, and her inflammatory markers were significantly elevated supporting a provisional diagnosis of persistent infection of dental origin or an infected haematoma following recent extraction. An urgent exploration, followed by incision and drainage of the right buccal space was performed under general anaesthesia (GA) the following day after admission. She received three postoperative doses of intravenous antibiotics (co-amoxiclav) and was discharged with a seven-day oral course following initial symptomatic relief.

Unfortunately, the patient's symptoms did not resolve fully and at outpatient review two weeks after discharge, a persistent well-circumscribed swelling of the right buccal space was noted. An ultrasound scan was arranged which suggested an organising haematoma, prompting a return to theatre for exploration under GA, and biopsy of the non-healing buccal space intra-orally. Worryingly, histopathological analysis was suggestive of a neoplastic connective tissue process, with features suspicious for sarcoma, although the final diagnosis was inconclusive. Staging scans were requested and included an MRI (magnetic resonance imaging) scan of the head and neck and CT (computed tomography) scan of the head, neck and chest. These scans showed a well-defined lesion in the right buccal space extending around the pterygomandibular raphe and posterior to the infra-temporal fossa (Fig. 1). There was no distant spread of disease.

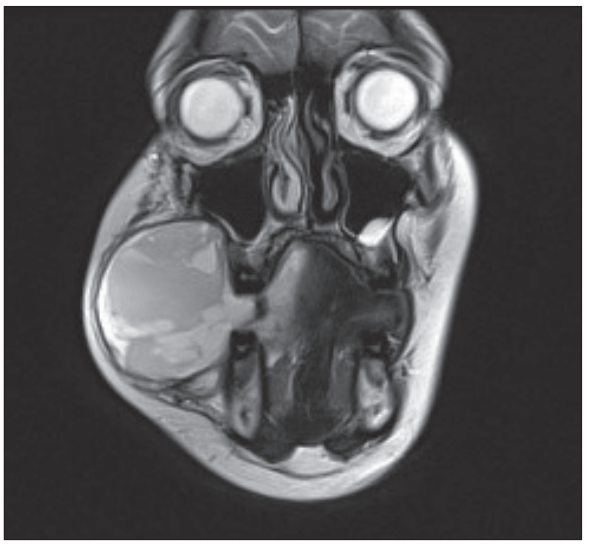

Fig. 1. *Magnetic resonance imaging head scan. This coronal view shows a complex soft tissue mass originating from the right buccal mucosa and expanding into the oral cavity.*

Fig. 2. *Immediate pre-operative images showing the large soft tissue mass, which has prolapsed out of the oral cavity.*

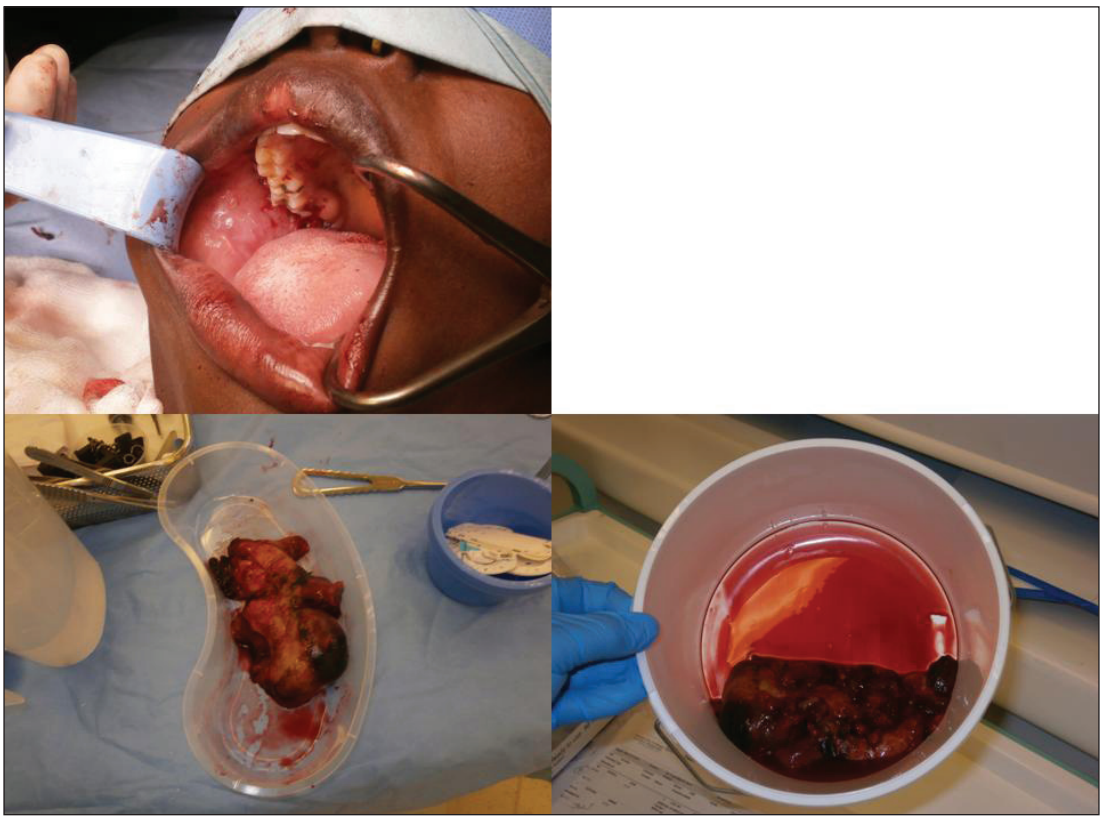

Fig. 3. *Intra-oral appearances post-resection above and the resected specimen below.*

Following the Head & Neck Multidisciplinary Team (MDT) recommendation, a further open biopsy of the right buccal mass was performed under GA to definitively classify the nature of the lesion. Tissue immunohistochemistry showed MyoD1 positivity in a significant proportion of cells and strong desmin positivity in most cells. These findings were consistent with a final histopathological diagnosis of localised sclerosing rhabdomyosarcoma of the right cheek. The patient was then referred to the oncology team for management of her soft tissue sarcoma with chemotherapy. Unfortunately, during the second cycle of chemotherapy, there was an acute rapid increase in the tumour size intra-orally due to prolapse and intratumoral haemorrhage confirmed by CT findings. This necessitated a return to the theatre six days later for tumour debulking (Fig. 2 and 3). After recovery from surgical intervention, the patient completed nine cycles of planned chemotherapy, followed by a six-week course of adjuvant radiotherapy. The patient responded well to treatment on serial imaging and at last follow-up remains free from recurrent disease.

Discussion

Our case highlights initial difficulties in the diagnosis of RMS of the oral cavity. This is not an uncommon finding in the published literature and such patients are often treated with multiple prolonged courses of antibiotics prior to definitive diagnosis.[9-11] Facial swelling and dental pain is a frequent presenting complaint to both general dental practitioners and maxillofacial surgeons. Since dental abscesses are extremely common, understandably this is often the first diagnosis considered.[12] However, the reported case serves to emphasise the importance of considering soft tissue malignancy, such as RMS in the differential diagnoses. Whilst RMS is the most common soft tissue sarcoma in children, it is rare in adults, accounting for <1% of all malignancies.[13] Due to the rarity of such cases, a high index of suspicion is required to make the diagnosis.

Once a biopsy is taken, various immunohistochemical markers can be used to identify RMS. These include vimentin, myoglobin, desmin, muscle-specific actin, sarcomeric actin, smooth muscle actin, Myo D, myogenin, troponin, S100 protein and cytokeratin.[14] In the reported case, tissue immunohistochemistry showed MyoD1 positivity in a significant proportion of cells and strong desmin positivity in most cells. These findings supported a final histopathological diagnosis of localised sclerosing rhabdomyosarcoma of the right cheek.

Classification of RMS as the sclerosing variant is an interesting topic for discussion in itself. The WHO classification system for RMS identifies three main subtypes; namely embryonal, alveolar and pleomorphic.[1] The sclerosing variant does not fit into the currently used WHO classification and appears to be a new histologic type.[7,8] In a recent review article, *J. Wang* et al. reported that only 27 cases of sclerosing RMS had been documented in the world literature in 2008.[15] Of these cases, only 11 (41%) occurred in the head and neck region; with the remaining cases occurring in the extremities (44%), sacrum (7%), scrotum (4%) and retroperitoneum (4%). By 2013, there was a total of 39 reported cases in the English language literature.[9] Thus, the reported case also serves to add to the growing body of evidence supporting the existence of a new sclerosing variant of RMS.

Once diagnosis is confirmed, radical excision combined with adjuvant chemoradiotherapy remains the mainstay treatment for most cases of sclerosing RMS, as is the case with conventional RMS.[16] As with most head and neck malignancies, a multidisciplinary team approach is required to ensure the best possible clinical outcome.[17] Key factors affecting prognosis of RMS are clinical staging, anatomical site, histology and age at presentation.[10] The embryonal subtype (70% of cases), which primarily affects young children, is associated with a relatively good prognosis. The alveolar subtype (15%) is usually encountered in older children and is associated with a worse prognosis. The rare pleomorphic subtype is usually seen in adults and is associated with a poor prognosis.[5,18]

Conclusion

This paper presents a rare case of sclerosing RMS of the buccal mucosa, which serves two

purposes. Firstly, it highlights the importance of accurate diagnosis by clinicians in the primary care setting, and prompt referral to a specialist Maxillofacial Unit. GDPs must be aware and consider the important differential diagnosis of RMS when assessing orofacial swellings. Furthermore, we believe that our case contributes to the growing body of evidence supporting a new sclerosing histological variant of RMS, which will hopefully aid in improving survival outcomes.

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