

## Granular cell tumor in soft palate: a very rare location

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**ABSTRACT** | Granular cell tumor (GCT) is a rare lesion of neural origin and uncertain nature. It can be a true neoplasm, a degenerative metabolic process or a trauma-induced proliferation. Generally, it appears as a singular benign lesion, however, there are rare cases that are malignant or multicentric forms. The most frequent orofacial localization is the tongue. The aim of this report was to describe a case of GCT occurring in the soft palate. This patient presented a discrete and asymptomatic nodule for approximately eight months. Definitive diagnosis of granular cell tumor was established by histological and immunohistochemical analyses. The case here presented illustrates the occurrence of granular cell tumor in an unusual region and emphasizes the importance of including this entity in differential diagnosis of soft tissue tumors in other locations besides the tongue.

**DESCRITORES** | Granular Cell Tumor; Differential Diagnosis.

**RESUMO** | **Tumor de células granulares no palato mole: uma localização incomum** • Tumor de células granulares (TCG) é uma lesão rara de origem neural e de natureza incerta. Pode ser um verdadeiro neoplasma, um processo degenerativo metabólico ou uma proliferação induzida por trauma. Geralmente, aparece como uma lesão benigna singular, no entanto, há casos raros que são formas multicêntricas malignas. A localização orofacial mais frequente é a língua. O objetivo desse relato foi descrever um caso de TCG afetando o palato mole. Este paciente apresentou um nódulo discreto e assintomático durante aproximadamente oito meses. O diagnóstico definitivo do tumor de células granulares foi estabelecido por análise histológica e imunohistoquímica. O caso aqui apresentado ilustra a ocorrência do tumor de células granulares em uma região não usual e enfatiza a importância de incluir essa entidade no diagnóstico diferencial de tumores de partes moles em outros locais além da língua.

**DESCRIPTORS** | Tumor de Células Granulares; Diagnóstico Diferencial.

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## INTRODUCTION

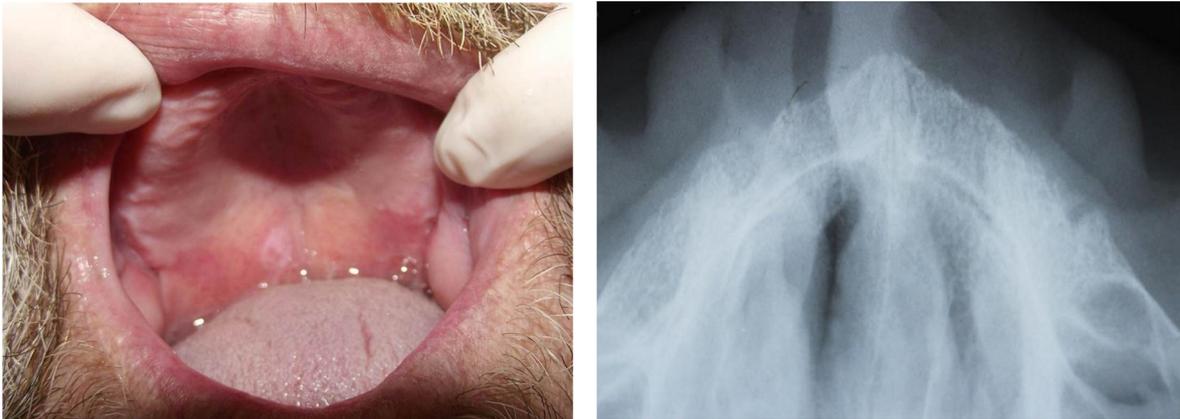
Granular cell tumor (GCT), also known as granular cell myoblastoma (GCM), due to its possible proposed origin from skeletal muscle, or as Abrikossoff's tumor, was first described by Abrikossoff in 1926 and has been variably considered a true neoplasm, a degenerative metabolic process or a trauma-induced proliferation.<sup>1</sup>

The neural origin, particularly of the Schwann cell type, is favored because of immunohistochemistry.<sup>2</sup> Clinically, the lesion presents as a single, sessile, asymptomatic, well-delimited nodular mass sometimes with a superficially

ulcerated nodule rarely greater than 3cm.<sup>3</sup> The most frequent orofacial localization is the tongue.<sup>4</sup> Since TCG is not usually located in the soft palate, with only 3 cases reported, a rare case of granular cell tumor affecting the soft palate will be described.

## CASE REPORT

A 58-year-old male patient came to the dental clinic of the State University of Maringá, PR, Brazil, complaining of a painless, non-ulcerated and slightly erythematous nodule, growing for eight months in the soft palate (Figure 1).

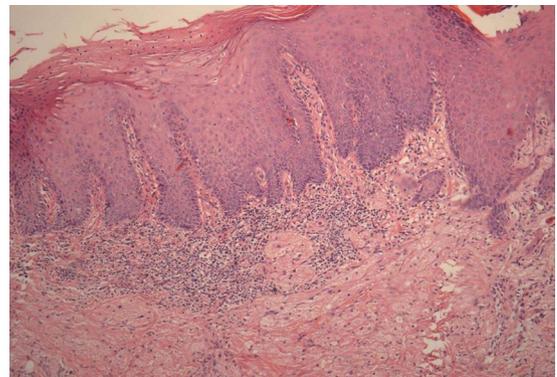


**Figure 1** | Clinical and radiographic aspect.

An excisional biopsy was performed for histopathological examination of the lesion. The mucosa was lined by a hyperkeratinized stratified squamous epithelium, sometimes associated with

hypergranulosis thus exhibiting sporadic dyskeratotic foci and mitotic figures, as well as crests of rhomboid pattern in pseudoepitheliomatous (Figure 2).

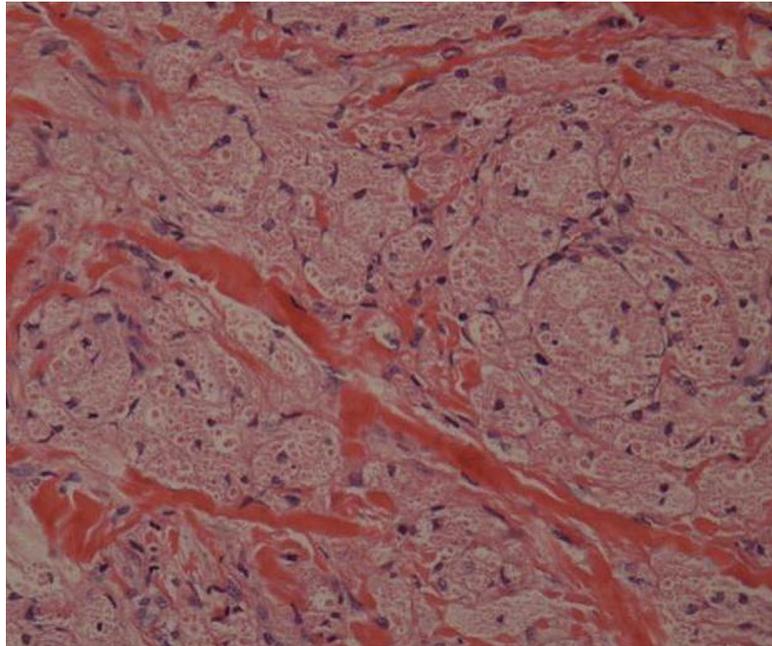
**Figure 2** | Histopathological examination revealing the mucosa lined by a hyperkeratinized stratified squamous epithelium. (hematoxylin-eosin; 10X magnification).



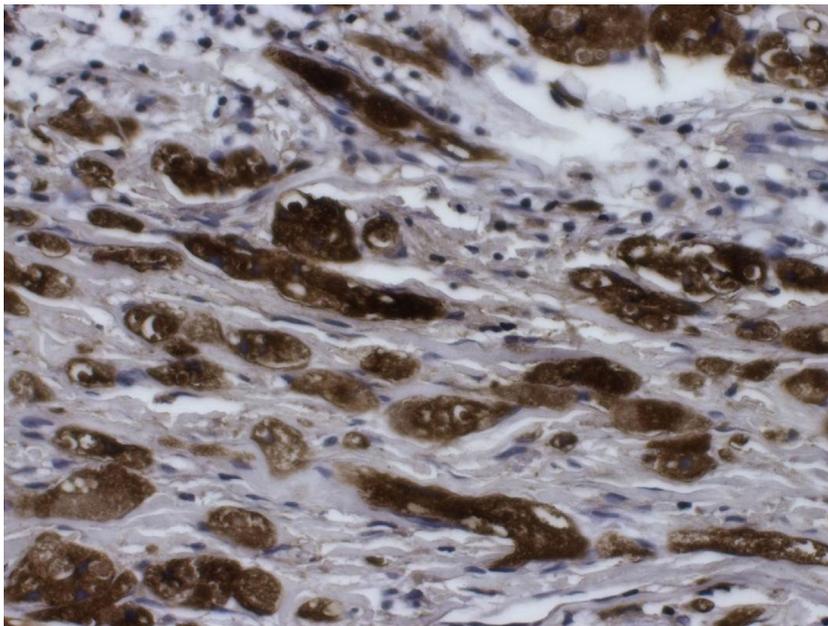
Subjacently, there was an extensive area with nests of polygonal cells with granular eosinophilic cytoplasm and small nuclei (Figure 3). Histopathological analysis pointed to the possibility of granular cell tumor and consequently, an immunohistochemical study was performed for the purpose of confirmatory

testing, showing positive staining for S-100 protein and also reinforcing the neural origin (Figure 4).

The patient had been under strict post-operative follow-up during three years, with no clinical evidence of recurrence and malignant transformation (Figure 5).



**Figure 3** | Nests of granular eosinophilic cells resembling nerve fibers in transverse section (hematoxylin-eosin; 40X magnification).



**Figure 4** | Immunoreactivity for S-100 protein.



**Figure 5** | 3th year post-operative follow-up.

## DISCUSSION

A wide variety of types of cells have been proposed as the cells of origin of granular cells, including histiocytes, fibroblasts, myofibroblasts, neural sheath cells, neuroendocrine cells, and undifferentiated mesenchymal cells. Abrikossoff described the lesion as composed of lenticular tissues and myoblasts, some of them presenting longitudinal and transverse striations, others containing dark granules.<sup>1</sup>

The most well substantiated hypothesis at the present moment is the one that states lesions are originated as a consequence of altered cellular metabolism of the Schwann cells or of its precursors.<sup>5</sup> The persistent presence of S-100 protein (known as an important marker for peripheral nerve sheath tumors) together with the close anatomic relationship with peripheral nerve fibers (in ultrastructural demonstrations of myelin figures and axon-like structures) support this theory.<sup>2</sup> In this study, the immunohistochemical analysis showed positive staining for S-100

protein, which is considered sufficient for diagnostic purpose.

Granular cell tumors (GCTs) can develop at any age.<sup>6</sup> However, tumors occur most frequently in the fourth to sixth decades of life.<sup>5</sup> Although studies suggested a female predilection,<sup>7,8</sup> gender preference is not unanimously accepted.<sup>9</sup> Different parts of the body can be affected by tumors, nevertheless, about 50% of cases are found in the head and neck area, especially in the tongue, accounting approximately 30% of the number of lesions.<sup>10</sup> Granular cell tumors (GCTs) are rarely located in the submucosa of the palate, with only 3 cases<sup>11-13</sup> affecting the soft palate. Because of that, GCT is not usually included in differential diagnosis for lesions in this location.

Microscopically, GCT presents polyhedral or round cells with small rounded nuclei eccentrically placed and a large granular eosinophilic cytoplasm with indistinct cell borders. Granular cells are usually arranged in cords or clusters, and the overlying epithelium may exhibit varying degrees of pseudoepitheliomatous hyperplasia,<sup>14</sup>

as observed in this case report. This feature can mimic infiltrative pattern and lead to a misdiagnosis of squamous cell carcinoma, especially in a superficial analysis.<sup>15</sup>

Differential diagnosis with other benign connective and neural tumors, such as fibromas, lipomas, neuromas, neurofibromas or schwannomas, also including their malignant variants, or even with epidermoid carcinoma, must be performed especially because of their different biological behavior.<sup>16</sup> Other benign tumors can present granular cells, such as congenital epulis, nonneural granular cell tumor and granular cell leiomyoma. In this immunohistochemical study, granular cell leiomyoma confirms the smooth muscle origin of the cells, since they are positive for Smooth muscle actin (SMA) and desmin, while negative for S-100.<sup>17</sup> Nonneural granular cell tumor differs clinically from GCT due to its expansive growth and cellular atypia. Immunohistochemically, Lerman and Freedman<sup>18</sup> described diffuse and strong staining for CD-63 and vimentin, focal positive staining for CD-68 and SMA, and negative staining for S-100. Congenital epulis is histologically similar to GCT, but is not reactive to S-100, SMA, CD-68 and desmin.<sup>19</sup>

Granular cell tumor (GCT) presents a benign behavior.<sup>20</sup> However, about 2% of cases can present a malignant course.<sup>21</sup> Fanburg-Smith *et al.*<sup>22</sup> have proposed histologic criteria to classify granular cell tumors, predicting their biologic behavior and malignant potential. These criteria include necrosis, spindling, vesicular nuclei with large nucleoli, increased mitotic activity (more than two mitoses per 10 high-power fields [200X magnification]), high nuclear-cytoplasmic ratio, and pleomorphism. When three or more of these criteria are found, GCT is classified as malignant, whether one or two are found, GCT is considered atypical, and when none of these characteristics are found, except for focal

pleomorphism, it is considered benign, as in this case.

The treatment of choice is conservative surgical excision<sup>23</sup>. No early recurrence is noted for total surgical excision curative, in an accurate histopathologic evaluation.<sup>24</sup> However, this is not always possible, because the tumor lacks a capsule.<sup>25</sup> Therefore, it is suggested that the tumor should be excised along with portions of adjacent tissue. This way, a low rate of recurrence has been reported.<sup>26</sup> In the present case, the complete surgical excision was performed and no signs of recurrence or malignant transformation were observed in his 3th year post-operative follow-up.

## FINAL CONSIDERATIONS

This study demonstrates that the association between clinical and histological aspects to the immunoprofile is important to establish the correct diagnosis of GCT, especially when the lesion occurs in an unusual site. Furthermore, the immunohistochemical analysis expand the knowledge on the lesion etiopathogeny.

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