Granular Cell Abrikossoff Tumours of the Larynx and Tongue Treated with the Carbon Dioxide (CO\(_2\)) Laser

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Abstract. Seven cases of granular cell Abrikossoff tumours of the larynx and tongue are reported: four in the tongue and three in the larynx. All of these tumours were removed with the carbon dioxide (CO\(_2\)) laser. The anatomical site of the origin and clinical features of granular cell tumours (GCT) are not specific. Histological, light microscopic, electron microscopic (EM) and immunohistochemical studies are required for diagnosis. The histogenesis and cellular derivation of GCTs is still controversial. The biological potential and lack of cellular atypia define a benign process. However, it is important to take into account that these tumours have ill-defined borders without a capsule. Radiation therapy has proved ineffective in the past. Surgical excision with a wide margin is required. Because of numerous advantages, for example, no bleeding, no oedema, minimal pain and quick recovery, CO\(_2\) laser removal is the treatment of choice. The authors have not seen any recurrence or complications.

INTRODUCTION

In 1926, Abrikossoff (1) gave the first description of a particular lesion characterized by large, polymorphic granular cells. Since that time, the histogenesis of this tumour has been surrounded by controversy. Abrikossoff considered a myogenic origin from embryonic muscle fibres and variously described the tumour as granular cell myoblastoma, myoblastic myoma or immature rhabdomyoblastoma (2).

In the next decade, Feyrter (3) proposed a neurogenic derivation, which was supported by electron microscopic (EM) and histochemical evidence (4, 5). He described the tumour as a granular cell schwannoma or a granular cell neuroma.

According to Sobel and Marquet's studies (6), the Abrikossoff tumour originates in an undifferentiated mesenchymal fibroblast-like cell. Batsakis (7) stated 'Very likely no single cell type is responsible for all of the forms of granular cell tumours and perhaps various sheet cells with histiococyte-like potential are the cells of origin.'

Because of continuing controversy, the World Health Organisation (WHO) proposed the term 'granular cell tumour' (GCT, 8).

Clinical features

Peterson (9) reviewed the data on the anatomic distribution of GCTs. The most common site is in the upper part of the aerodigestive tract. More than one-third of all these lesions occur in the tongue, about one-third in the skin and 10–15% in the larynx (10). The remainder appear in all parts of the body.

The lesions grow slowly and do not have a characteristic appearance. They can be flat, buttonlike, sessile or polypoid (10). In most cases, the size ranges from 3 to 20 mm in diameter. The most common age at appearance is in the fourth and fifth decades of life.

There is no characteristic colour to the lesion. It depends on the site and thickness of
overlying tissues but most frequently it is greyish-red.

**Histology**

The correct diagnosis of GCT can only be given by histological, EM and histochemical examination. The gross appearance of the cut surface is grey, resembling fish flesh (11). The lesions have no connective tissue capsule; there is a poor delineation of the periphery, and there is infiltration into the surrounding tissues. The cells of these tumours are large, polymorphic and possess a pale-staining acidophytic and granular cytoplasm with small hyperchromatic nuclei (Figs 1 and 2). The cytoplasmic granularity is periodic acid-Schiff (PAS) positive. In all the authors' cases, there was strong immunoreactivity for the S100 protein.

The overlying squamous epithelium is frequently thickened, forming acanthotic pegs or onionlike layers, which can lead to an incorrect diagnosis such as pseudocarcinomatous hyperplasia (11).

**MATERIALS AND METHODS**

**Case reports**

Between 1981 and 1993, seven patients with GCT were treated in the authors' department. Four of the GCTs arose in the tongue and three in the larynx. Table 1 summarizes some clinical data on the patients. Among them, six were in the fourth and fifth decades. The median age was 45.4 years. The lesions were greyish-yellow or greyish-red in colour, and moderately soft.

The four tongue tumours were nearly asymptomatic. The patients felt slight itching and they could see or touch the lesion. Two of the GCTs occurred on the lateral border and two on the dorsum of the tongue (Fig. 3). In one case (No. 6), there were two discrete lesions. In the tongue, slightly raised (Nos 4, 7) and button-like (Nos 2, 6) circumscribed lesions were found. In one case (No. 7), the patient had synchronous piriform sinus cancer.

In the upper respiratory system, GCTs arise most frequently in the larynx. Here the most common location is the posterior third of the true vocal cord (Fig. 4).

In the authors' cases, the locations were as follows: In Patient No. 1, there was an 11 mm sessile greyish-red lesion on the posterior third of the left vocal cord which caused an 8-month history of hoarseness. The mobility of the vocal cords was not impaired. In Patient No. 3, the tumour arose in the arytenoid region. It was 5 mm in diameter and greyish-yellow in colour. The overlying and surrounding epithelium was thickened, forming squamous acanthotic pegs. The patient had chronic laryngitis with hawking. In Patient No. 5, the location of the lesion was on the right edge of the aryepiglottica fold. In this case, the gross appearance of the tumour was cyst-like, but on removal it was solid. The lesion was asymptomatic. The patient had an acute laryngitis when it was recognized.