Ultrasound of the Granular Cell Myoblastoma
So-Called Abrikossoff’s Tumor

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Summary. The ultrastructure of a typical case of Abrikossoff’s tumor of the tongue is described. The histogenesis of the granular cells as well as the nature of the virus-like particles are discussed in relation to published ultrastructural observations.

The AA maintain the neurogenic origin of granular cells, however, a possible multicentric origin cannot be ruled out.


Since the classical description of Abrikossoff [1,2] up to the present, about 550 cases of Granular Cell Myoblastoma have been reported, according to Moscovic and Azar [12].

In spite of this comprehensive record, the histogenesis of this tumor is still poorly understood, and the histochemical and ultrastructural findings of the various Authors are in strong disagreement.

Because of the different histogenetic interpretations, about 20 synonyms of the so-called Abrikossoff’s tumor can be found in the literature [12].

In the present paper, we will try to illustrate what we were able to observe while studying the fine structure of a typical case of granular cell myoblastoma of the tongue, and to review the ultrastructural data obtained up to now.

Materials and Methods

Biologic fragments of a typical Abrikossoff’s tumor of the tongue were fixed in 1% osmium tetroxide in Millonig buffer [10] for 4 h at 4°C, dehydrated in acetone and embedded in Vestopal according to the technique described by Caputo and
Lombardi [5]. Sections were cut with LKB Ultratome microtome, stained with uranyl acetate and lead citrate and observed with a Philips EM 200 electron microscope.

**Results**

The tumor mass, as seen at the electron microscope, appears to be formed by fairly large dendritic cells clustered together. Each cell cluster is delimited by a basement membrane about 200 Å thick (Fig. 1). The nuclei of these cells are seldom observed in the sections. They generally have an irregular outline, and a finely granular cytoplasm (Fig. 2).

The appearance of the cytoplasm is complex. The Golgi apparatus, as well as the smooth endoplasmic reticulum are clearly visible, while mitochondria are infrequent and centrioles almost exceptional (Fig. 2).

The cellular elements are characterized by the presence of a large quantity of more or less osmophilic granules, which can be grouped as follows:

- granules with an almost homogeneous structure, well outlined by a membrane and containing sometimes low electron density areas lacking a definite structure (Fig. 3).
- granules constituted by dense aggregates of small particles, of a diameter ranging between 200 and 500 Å (Fig. 3). These particles may show a central core of high electron density, so as to look like a virus (Fig. 3, inset) and they represent the most typical ultrastructural pattern of these cells.
- finally, rare granules, of a variable shape, delimited by a membrane and containing a very high quantity of randomly oriented microtubules (Fig. 4).

The round virus-like particles can be very numerous, either free in the cytoplasm or clustered together and, sometimes, mixed with membrane fragments (Fig. 5). Among the granular cells, elongated cell processes with a clear cytoplasm are frequently observed; they are very rich of fine filaments whose structure closely resembles that of axons (Fig. 6).

These cell processes are in some cases directly linked with the granular cells, and they may contain all the three types of granules described above (Fig. 7).

**Discussion**

The histogenesis of the granular cells of the so-called Abrikossoff’s tumor is still the object of discussion. Four hypothesis have been put forward, mainly based on histochemical data:

- myogenic histogenesis, due to regressive phenomena of muscular fibers [7, 14, 16] and myoblasts [9];
- histiogenic histogenesis, according to which the granular cells could be histiocytes [3, 17] or fibroblasts [13], properly modified;