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Case Report

Diffuse Hyperplastic Oncocytosis of the Parotid Gland

Case Report with Histochemical Observations

Roberto Vigliani[1] and Carlo Genetta[2]

Ospedale Maggiore di San Giovanni Battista e della città di Torino,
[1] II Servizio Istituto di Anatomia e Istologia Patologica dell'Università
[2] Divisione di Medicina Generale E,
Via Santena 7, I-10126 Torino, Italy

Summary. This report concerns a very rare case of diffuse hyperplastic oncocytosis involving the parotid gland and occurring in a 66-year old man. The clinical, macroscopical, microscopical and histochemical findings are presented and discussed.

Key words: Salivary oncocytosis histochemistry

Introduction

Although a number of requisites are necessary to fully characterize the oncocyte (Gray et al. 1976), this type of cell is easily recognizable on histological sections with a simple haematoxylin-eosin staining. Oncocytes are peculiar transformed cells exhibiting a large amount of granular oxyphilic cytoplasm. Their nuclei are centrally located, usually ovoid or rounded, with or without a condensed chromatin pattern. In the acini of the salivary glands an increase in the frequency of these cells has been noted with aging of the individual. Pathologically, a review of the literature (Evans and Cruickshank 1971; Thackray and Lucas 1974; Seifert and Donath 1976) shows the existence of 3 main groups of oncocytic salivary lesions: 1) Metaplastic oncocytosis, 2) Monomorphic oncocytic tumours, 3) Other tumours with more or less prominent oncocytic component. We have recently observed a case of diffuse (non nodular) hyperplastic oncocytosis that occupied the entire parotid gland. The pattern and the degree of this oncocytic proliferation, to our knowledge, has not been recorded previously. An histochemical study was also performed in order to evaluate the cytological characteristics more completely.

Case Report

A 66-year old man was admitted to hospital with swelling in the right parotid region. This had gradually increased during several months. Clinical examination revealed a soft mass

Offprint requests to: R. Vigliani at the above address

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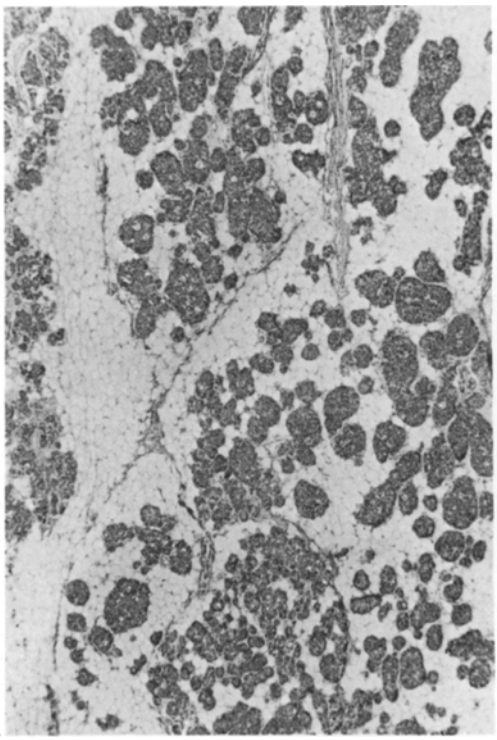

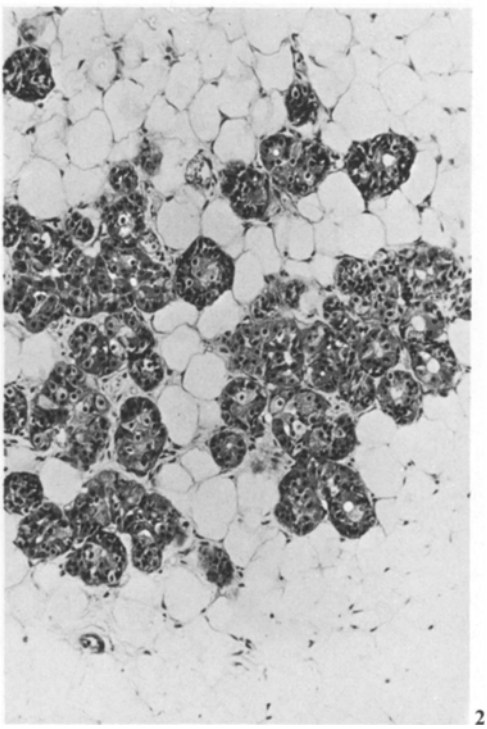

Fig. 1. Diffuse oncocytosis: lobular structure. Note abundant interstitial adipose tissue and thin septa (Haematoxylin-eosin, × 65)

Fig. 2. Ductular-acinar arrangement of oncocytes. Note the cellular stratification (Haematoxylin-eosin, × 380)

extending below the angle of the mandible. No cervical lymph nodes were palpated. The general physical data were otherwise non contributory and the admission laboratory tests revealed no abnormalities. No preoperative sialogram was performed. At surgery the parotid appeared diffusely enlarged. A total parotidectomy was done with preservation of the facial nerve. There has been no recurrence of tumour after one year.

Pathological Findings

Gross Description. The entire parotid was transformed into a well encapsulated mass $6 \times 4 \times 3$ cm; on slicing the tumour was firm and tan-brown in coulour. Gray-white fibrous septa were noted separating it into large polyhedral areas.

Light Microscopy. Many fragments were fixed in 10% formalin and embedded in paraffin. On histological sections we find an impressive uniform appearance of numerous ductular-acinar structures branching diffusely into abundant fibrous and/or adipose tissue as lobular complexes among fine septa (Fig. 1). These are almost exclusively composed of several layers of oxyphilic granular cells (oncocytes) with normochromic nuclei (Fig. 2). The

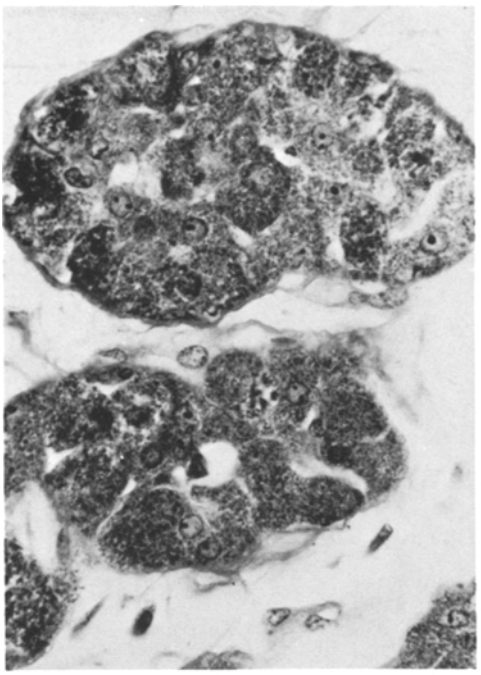

Fig. 3. Oncocytes: classic polihedral and granular cytoplasms (Phosphotungstic acid haematoxylin, ×1,900)

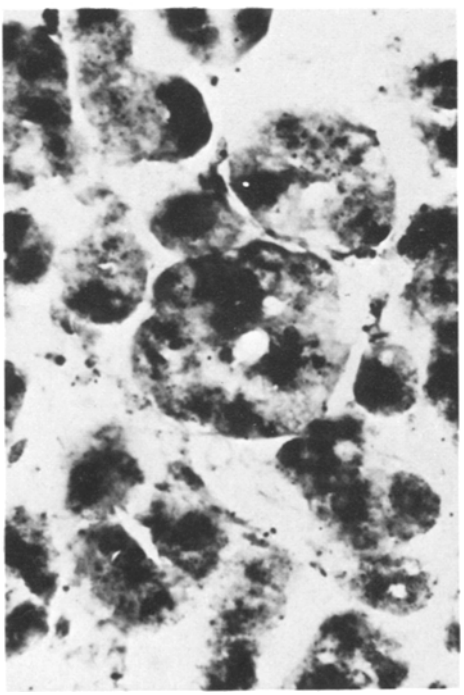

Fig. 4. Diffuse oncocytosis: intense granular naphtol-AS acetate esterase positivity of the oncocytes (Fast Blue BB, ×1,125)

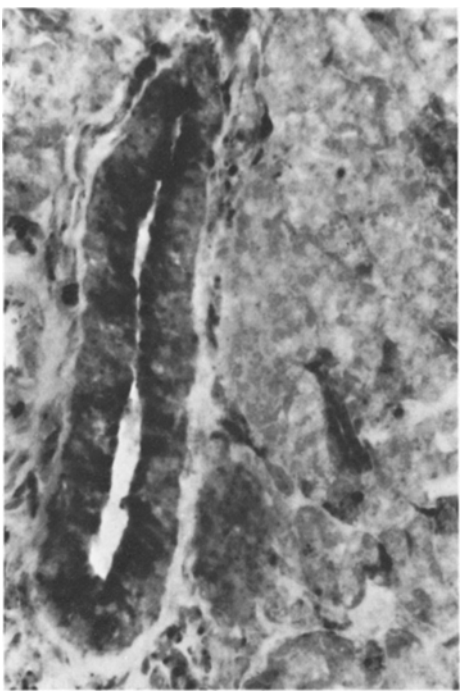

Fig. 5. Normal parotid: intense naphtol-AS acetate esterase activity into the epithelial cells of the striated and intercalated ducts. The acinar cells are negative or very weakly positive (Fast Blue BB, ×1,125)

granules strongly react with phosphotungstic acid haematoxylin (Fig. 3). Rare intracytoplasmic globules and little intraluminal material give PAS-positive reaction after diastase treatment. The silver impregnation method of Grimelius for endocrine-type substances is negative. Gomori's reticulin staining reveals a delicate fibrillar network. Several interlobular ducts with squamous epithelium are intermixed. Near these, small foci of lymphocytic infiltration are scatteredly present. Occasional interstitial histiocytes containing PAS-positive diastase-resistent material are also observed. Very few sporadic residual atrophic parotid lobules are found outside the thin capsule.

Histochemical Observations. Specimens of the mass and normal parotid glands, for control, were fixed in formol-sucrose, pH 6.8, at 4 °C. Several cryostat tissue sections of 4–5 μ thickness, mounted onto slides pretreated with formol-gelatine were incubated at room temperature, for detection of two non specific esterases, namely acetate esterase, pH 6.8, and naphtol-AS acetate esterase, pH 5.8, according to Li et al. (1973). Alpha-naphtyl acetate esterase, pH 5.8, according to Mueller et al. (1975) and acid phosphatase according to Li et al. (1970) were also investigated. The oncocytes give intense granular positive reaction for esterases and acid phosphatase (Fig. 4). Frequently the luminal borders of the cytoplasms react more obviously. Analogous positive features are observed in the ductal epithelial cells of the normal parotid glands (Fig. 5). The acinar cells are negative

or react very weakly for non specific esterases and show a moderate diffuse positivity for acid phosphatase.

Discussion

Important morphologic, histogenetic and pathogenetic consideration (Azzopardi and Hou 1964; Hübner et al. 1967; Evans and Cruickshank 1970; Allegra 1971; Askew et al. 1971; Eversole 1971; Thackray and Lucas 1974; Seifert and Donath 1976; Seifert et al. 1980; Hsu et al. 1981) have clearly stated the distinction between oncocytic tumours (namely oncocytoma, cystadenolymphoma) and metaplasias (oncocytosis) of salivary glands. Nevertheless the reports of some entities as diffuse multinodular oncocytoma (Schwartz and Feldman 1969), multiple oncocytoma (Blanck et al. 1970), stroma poor cystadenolymphoma and cystadenoma with no lymphoid stroma (Seifert et al. 1980) suggest the existence of transitional forms in the area of the oncocytic neoplasia and put the problem of their differentiation from the hyperplasias. Moreover the occurrence of rare malignant oncocytomas extends the histopathological spectrum biologically (Hamperl 1962; Gray et al. 1976) and entails the necessity of exact differential diagnosis. In our patient's affection micronodularity, trabecular or large solid areas, cysts, papillae, perivascular and tubular-cribriform patterns, lymphoid stroma, nuclear atypia were all absent. These observations, in our opinion, exclude the possibility of a salivary adenoma or oncocytic carcinoma, while the diffuse oncocytic proliferation seen throughout, in a hypercellular ductular-acinar architecture in abundant fibrous-adipose tissue, indicates the metaplastic nature and hyperplastic peculiarity of this lesion. The uniform enlargement of the entire parotid gland within the thin capsule, the septa and the presence of residual interlobular ducts also support this interpretation.

As far as the other differential diagnosis are concerned, undoubtely most of these oncocytes exhibit a certain acinar cell morphology. However, other than those classic granular-basophilic and/or clear cytoplasms, acinic neoplastic cells show much more trabecular-solid or cribriform arrangements. Sialosis is actually considered to be a metaplastic non-oncocytic regressive swelling of the salivary epithelial sells. Other salivary tumours with a partial oncocytic component are easily recognizable. With regard to the pleomorphic adenomas it should be noted that the greater number of those oncocytic-like cells occurring in these neoplasms are probably s.c. hyaline cells (Lomax-Smith and Azzopardi 1978). The histochemical control patterns of the parotid glands observed agrees with the literature (Murata and Myaji 1966; Sirigu and Cossu 1979). Our observations confirm the high enzymatic capability of the salivary oncocytes, previously investigated by Balogh and Roth (1965). With regard to the enzymatic morphology of the oncocytes no diversity was observed among non specific esterases and acid phosphatase. In particular the comparative examination of intensity, granularity and cytoplasmic localization of these activities in normal parotids and oncocytosis demonstred a striking similarity between the ductal

epithelial cells and the oncocytes. This may correspond to their mutual analogies in conventional light microscopy, especially in the striated ducts. Nevertheless differences in enzyme patterns and ultrastructure were clearly pointed out (Balogh and Roth 1965). Indeed the oncocytic transformation can originate in salivary or extra-salivary tissues (Hamperl 1962) and develop variously according to different organs and/or biological factors.

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