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Sclerosing Polycystic Adenosis of the Parotid Gland – A Case Report –

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Sclerosing polycystic adenosis (SPA) of the salivary glands is a rare entity analogous to fibrocystic disease of the breast. Less than 50 cases of SPA have been published in the literature. We report the first Korean case of SPA of the right parotid gland. A 34-year-old man presented with a slowly growing right parotid mass. Computed tomography showed a relatively well-demarcated, heterogeneously enhancing mass with multiple small calcifications. Fine needle aspiration showed cohesive sheets of epithelial cells with granular oncocytic cytoplasm and scattered lymphocytes. The parotidectomy specimen showed a 3 cm-sized solid nodular lesion with small cysts. Microscopically, the lesion was an unencapsulated mass of sclerotic fibrous tissue with cystic ducts, multiple calcifications, and lymphoplasma cell infiltration. Sclerosing adenosis and cystic ducts with frequent apocrine-like cells were noted. Familiarity with the cytologic and histological features of SPA is very important making the correct diagnosis.

Key Words: Salivary glands; Parotid gland; Pathology

Sclerosing polycystic adenosis (SPA) is a rare salivary gland lesion analogous to fibrocystic disease and sclerosing adenosis of the breast.[1] SPA was initially considered to be a reactive pseudoneoplastic lesion, but a recent investigation supports the neoplastic nature of SPA.[2] The characteristic histopathological features of SPA are lobulated masses of sclerotic collagenous tissue with hyperplastic ductal and acinar elements accompanied by cystically ectatic ducts. The dilated ducts frequently show apocrine-like metaplasia and epithelial hyperplasia.[1] The combination of sclerosis, epithelial hyperplasia, and cystic changes are reminiscent of fibrocystic changes in the breast. A sparse to focally intense lymphocytic infiltrate accompanies the epithelial proliferation. Less than 50 cases of SPA have been reported in the English literature to date.[1-10] Here, we report the first Korean case of SPA of the right parotid gland, with its cytopathological features and review of the relevant literature.

CASE REPORT

A 34-year-old man presented with a slowly growing right parotid mass since last 3 months. The patient had a history of syphilis and was a hepatitis B carrier. Computed tomography showed a relatively well-demarcated and heterogeneously enhanced, 3 cm solitary mass in the right parotid gland (Fig. 1A). Fine needle aspiration (FNA) with Papanicolaou staining was performed, and showed sheets of epithelial cells mixed with mature lymphocytes (Fig. 2A). The epithelial cells revealed abun-

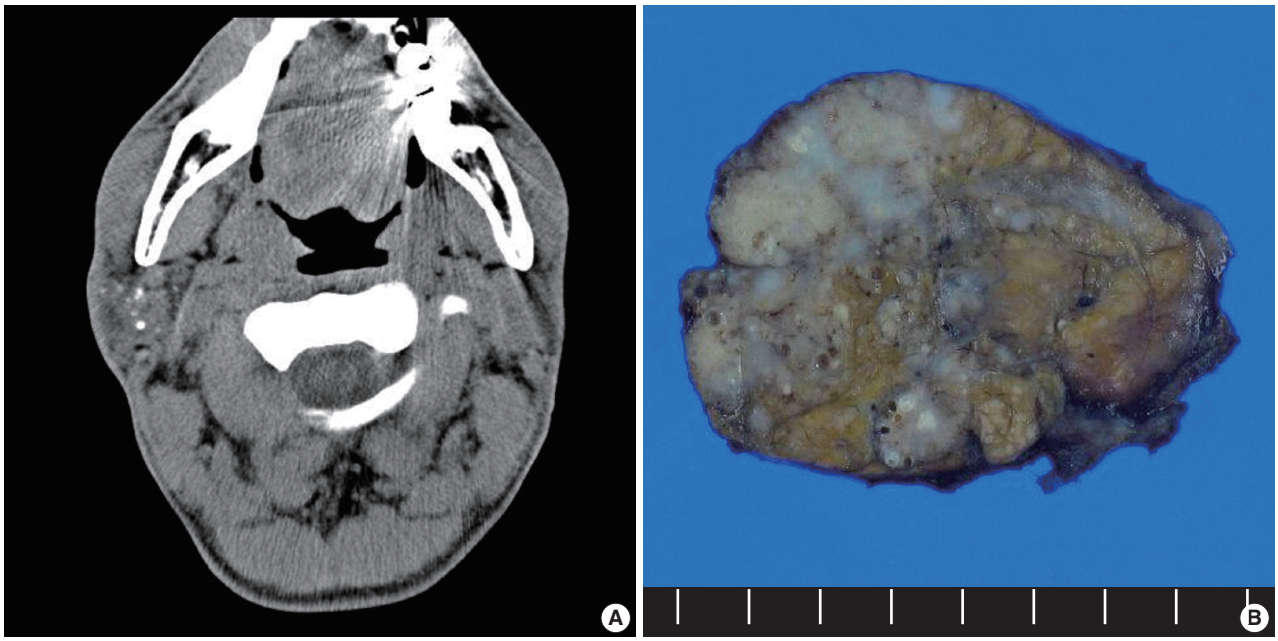

Fig. 1. (A) Post-contrast computed tomography of the neck shows a heterogeneously enhancing mass with multiple small calcifications in the right parotid gland. (B) Three cm diameter, poorly circumscribed solid tumor with small cysts. The cut surface shows lobulated sclerotic nodules composed of fibrocollagenous stroma and calcification.

dant finely granular oncocytic cytoplasm and uniform round to oval nuclei with even chromatin and indistinct nucleoli (Fig. 2B). Scattered mature lymphocytes were admixed with epithelial cells. Some of the epithelial cells exhibited vacuolated cytoplasm (Fig. 3C) and contained apocrine-like granules (Fig. 3D). Based on the FNA cytological findings, the case was diagnosed as "oncocytic lesion, suspicious for Warthin's tumor," and surgical resection was recommended. The patient underwent a superficial parotidectomy. Grossly, there was a poorly circumscribed solid mass measuring 3×2 cm in size. On section, the tumor was a whitish-tan, lobular, solid mass with small cysts and multiple calcifications (Fig. 1B). Microscopically, the lesion exhibited hyalinized collagenous sclerosis with foci of ductal and acinar proliferation, cystic ducts, and chronic inflammation (Fig. 3A). The tubuloacinar hyperplasia had an indistinct lobular pattern. The extensive fibrosis often contained rounded, hyalinized nodules, which sometimes surrounded aggregates of foamy histiocytes. Areas of ductal proliferation were also observed in the fibrotic stroma (Fig. 3B). Some cystic ducts had an apocrine-like epithelium with snouting (Fig. 3C). Dilated ductal epithelial cells with vacuolated cytoplasm were also seen (Fig. 3D). Some acinar cells had large, eosinophilic, periodic acid-Schiff-positive, cytoplasmic granules (Fig. 3E). Some lymphoplasma cell infiltrate was found within the lesion, and there were multifocal dystrophic calcifications. Immunohistochemically, the continuous abluminal myoepithelial layer surrounding nearly every ductal and acinar epithelial cell was positive for alpha-smooth muscle actin and p63 (Fig. 3F). The lesion was negative for Epstein-Barr virus (EBV) on *in situ* hybridization.

DISCUSSION

SPA was first described by Smith *et al.*[1] in 1996. Smith *et al.*[1] considered SPA to be a rare, nodular, sclerotic, and inflammatory lesion with some features similar to fibrocystic disease of the breast. SPA occurs mainly in the parotid gland, and rarely in the submandibular or minor salivary glands.[1,5,11] SPA seems to be a disease affecting elderly male patients, presenting at a mean age of 46 years.[5,6]

The etiology of SPA is still being debated. Swelam[12] first demonstrated the possible pathogenic role of EBV in SPA. However, other studies have not reported on the EBV status in SPA. Our case was negative for EBV using EBV-encoded RNA *in situ* hybridization. Therefore, more molecular studies on a greater number of cases might be needed.

Controversy has recently arisen as to whether this lesion is a reactive lesion or a true neoplasm. Skálová *et al.*[2] investigated six lesions that demonstrated a non-random pattern of X chromosome inactivation by analyzing a human androgen receptor

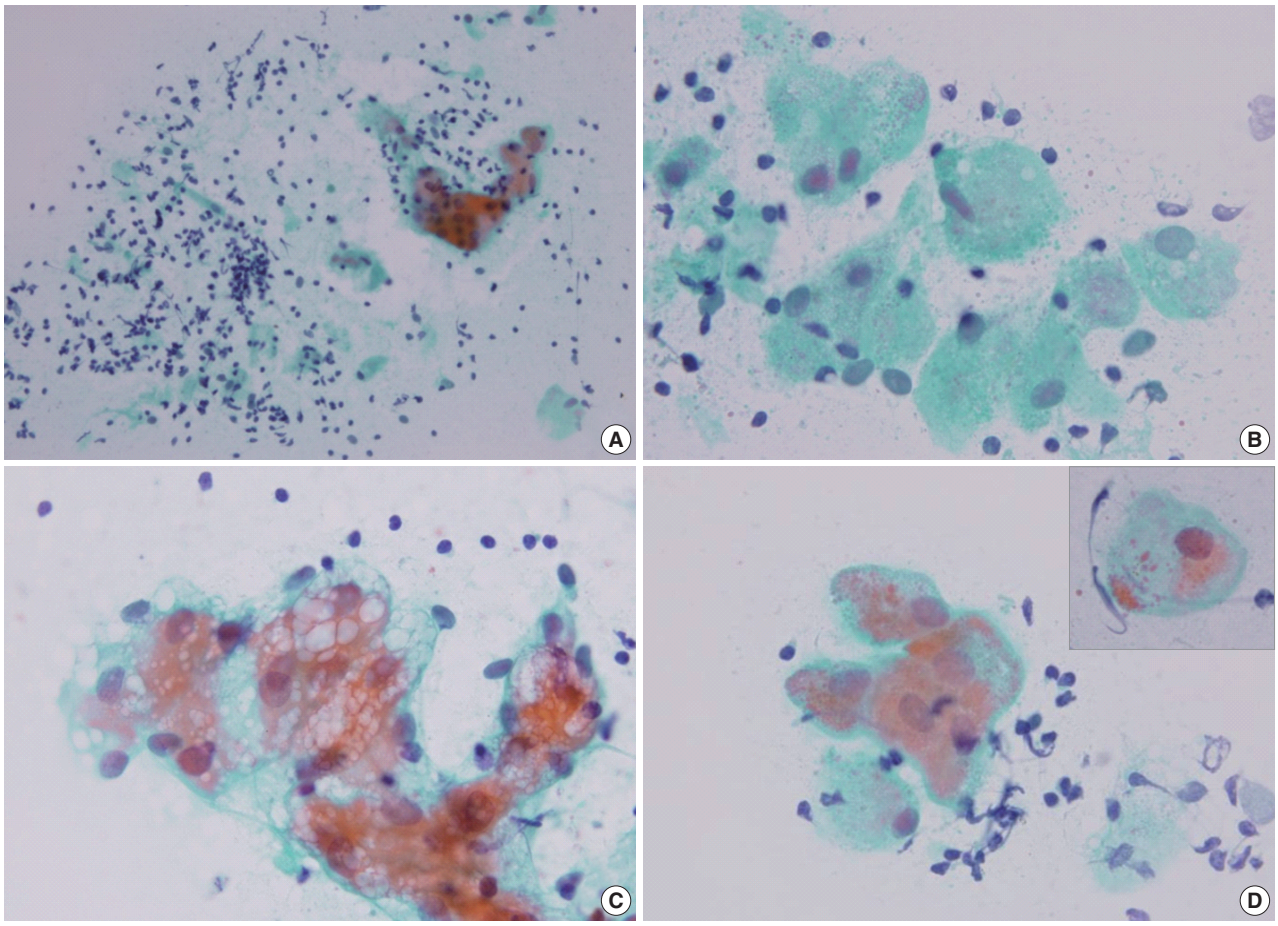

Fig. 2. Fine needle aspiration cytology of sclerosing polycystic adenosis. (A) Scattered mature lymphocytes and a sheet of plump epithelial cells with abundant granular cytoplasm. (B) Epithelial cells with abundant, finely granular cytoplasm with round nuclei, even chromatin, and indistinct nucleoli. (C) Sheet of epithelial cells with vacuolated cytoplasm. (D) Sheets of apocrine-like cells with cytoplasmic granules (Papanicolaou stain).

(*HUMARA*) locus polymorphism implying clonal proliferation. Some cases of SPA were associated with cytological atypia or dysplasia.[3] Although some lesions have recurred, none of the patients have developed metastases or died of the disease to date.

Establishing the diagnosis of SPA with FNA is challenging for pathologists because of its rarity and the presence of various oncocytic lesions in the salivary glands. On FNA, moderate to abundant eosinophilic cytoplasms seen in SPA suggest the differential diagnosis between Warthin's tumor, oncocytoma, acinic cell carcinoma, low-grade mucoepidermoid carcinoma, pleomorphic adenoma, cystadenoma, cystadenocarcinoma, and salivary duct carcinoma. Due to the mixed population of oncocytic cells and mature lymphocytes, the case was initially misdiagnosed as Warthin's tumor on FNA. In contrast to other oncocytic neoplasms, the oncocytic cells of SPA show finely granular vacuolated cytoplasms and apocrine metaplastic changes. Familiarity with the cytomorphological appearance of SPA is very important making the correct diagnosis.

Gnepp *et al.*[5] have described a wide range of histological features of SPA. The lesions were typically well-circumscribed, but unencapsulated, and consisted of a proliferation of microcysts, ducts, and acinar structures in a densely sclerotic stroma. Occasional closely packed small ductular elements reminiscent of sclerosing adenosis of the breast have also been seen, such as in Fig. 3B. The ductal epithelium often contains areas of apocrine metaplasia with deeply eosinophilic snouting protuberances extending into the ectatic ductal lumina. The acinar cells often contain dense eosinophilic granules consistent with altered zymogen granules. Variable proliferation of the epithelial cells results in intraductal bridges or cribriform patterns. Our case exhibited the typical histological features of SPA as described above. The present case was also associated with diffuse fatty change and multifocal calcifications, which have not been described in previous reports.

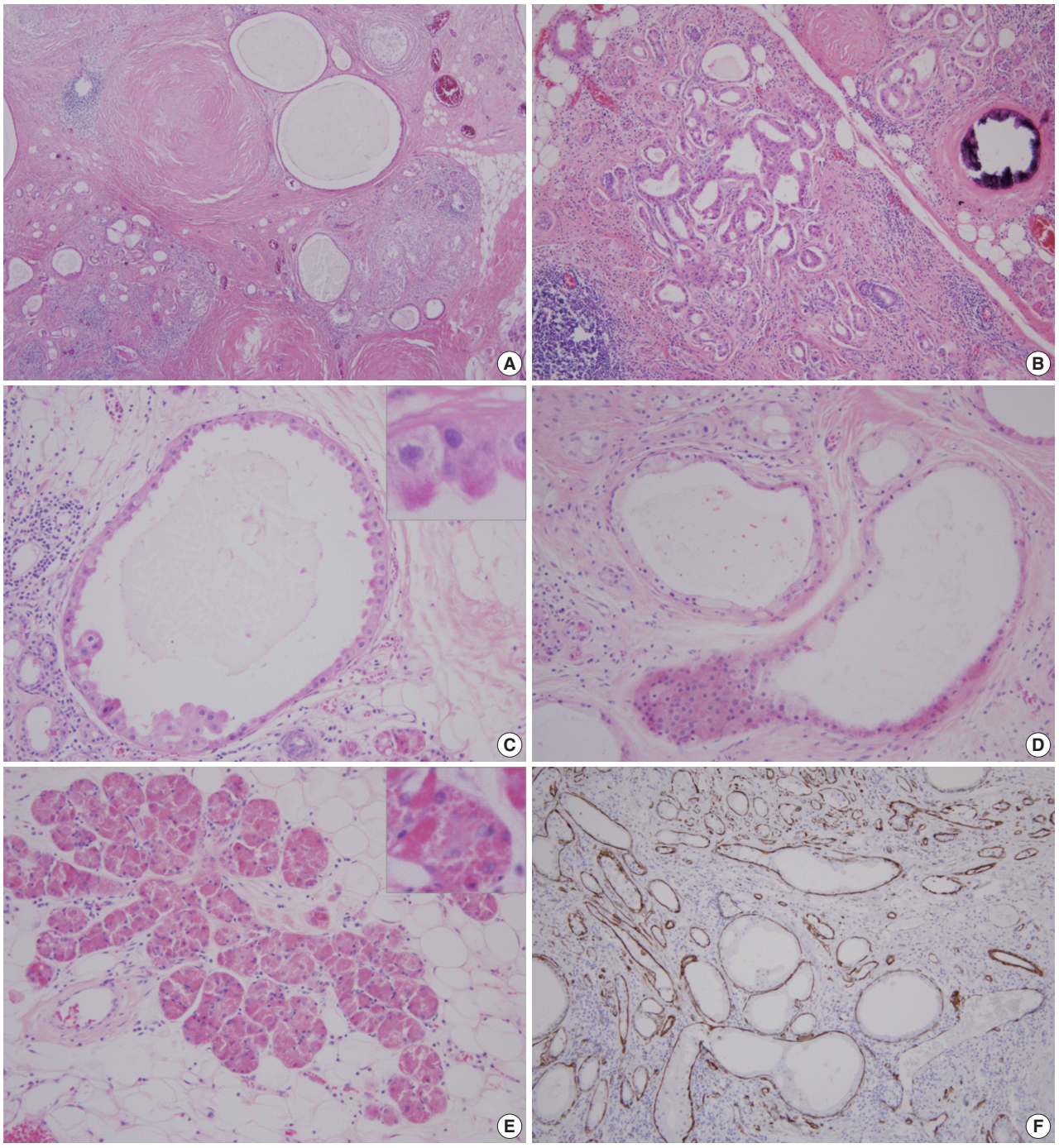

Fig. 3. (A) The lesion reveals hyalinized collagenous nodules with foci of cystically ectatic ductal and acinar proliferation with chronic inflammation. (B) Areas of ductal proliferation in the fibrotic stroma, simulating sclerosing adenosis of the breast. (C) Cystic ducts with apocrine-like epithelium with deeply eosinophilic snouting protuberances. (D) Dilated ductal epithelial cells with vacuolated cytoplasm. (E) Acinar cells with large, eosinophilic cytoplasmic granules. (F) Immunohistochemical staining for smooth muscle actin shows a continuous positive outer layer.

The histopathological differential diagnosis of SPA includes benign and malignant epithelial neoplasia, as well as reactive lesions, including pleomorphic adenoma, Kuttner tumor, polycystic disease of the salivary glands, cystadenocarcinoma, low-grade mucoepidermoid carcinoma, and acinic cell carcinoma. Familiarity with the characteristic histologic features of SPA, is very important for differentiation from other salivary gland lesions.

Treatment for SPA is surgical excision. To date, recurrence has been reported with some frequency, but it is generally thought to be the result of inadequate surgical excision or, perhaps, due to the occasional multifocal nature of the lesion.

In conclusion, SPA is a benign salivary gland lesion with distinct cytological and histological patterns. The various reactive and neoplastic salivary gland lesions make a correct diagnosis of SPA a challenge for pathologists. Here, we reported the first case of SPA in Korea with its FNA findings and histological features.

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