Case 391

3. Mucoepithelial carcinoma

【Progress】

He received surgical resection of the nodule. Histological examination revealed mucoepidermoid carcinoma.

【Discussion】

There are three main tumors on salivary gland tumors: pleomorphic adenoma, Warthin tumor and mucoepidermoid carcinoma. Mucoepidermoid carcinoma is the third place of the salivary gland tumors. It is known that pleomorphic tumor is shown hypointense or mixed-intense on T1WI, hyperintense on T2WI, high intense on DWI with higher ADC values (1-3). Meanwhile, Warthin tumor compose of low signal intensity corresponded to tumor parenchymal area, and of high signal intensity corresponded to cystic area with protein-filling (mucin) cyst or cholesterol, high intense on DWI with lower ADC values probably because of lymphoid cells accumulation (1-4).

Mucoepidermoid carcinoma arises from parotid glands and minor salivary glands and is depicted on high, intermediate, low on T1WI and low to high on T2WI, depending on tumor degrees (1-3). Mucoepidermoid carcinoma is composed of tumor cells with characteristics of mucin cells, intermediate cells and epithelial cells. Average ages of mucoepidermoid carcinoma are fifties (1-3).

Several lesions depict high signal intensity on T1WI. It is well known that brain hemorrhage at the stage within one month after the hemorrhagic onset is high signal intensity on T1WI that indicates the component of high signal intensity is methemoglobin, being paramagnetic with effecting on longitudinal relaxation of proton, namely shortening of longitudinal relaxation time indicative of becoming white on T1WI (5). Other than that, fat, melanin, high protein, mucin (glucose-protein) and high mineral such as calcium, iron, Cu, Zn, Mn that are paramagnetic, are listed (5).

In our case, mucoepidermoid carcinoma is depicted on high intense on T1WI and low intense on T2WI. Although mucoepidermoid carcinoma contains mucin whose pure mucin is depicted white on T1WI, mucinous tumor irrespective of mucinous cyst adenocarcinoma or mucinous cystadenoma, is depicted black on T1WI because water component is much greater than mucin component, according to histological examination (6). Meanwhile, mucoepidermoid carcinoma is known to develop from low grade, intermediate grade to high grade. Histological examination revealed low grade carcinoma in our case. It is known that hepatocellular carcinoma also develops from low grade to high grade, that reflect high intense to low intense on T1WI (7). Low grade hepatocellular carcinoma with high signal intense on T1WI is thought to reflect high concentration of Zn or Mn inside the tumor that belong to paramagnetic effect on shortening of longitudinal relaxation of proton (7). High signal intense on T1WI reflect high trace metals with paramagnetic characters. Then, our patient tumor with high signal intense on T1WI might be a stage of atypical dysplasia or low-grade mucoepidermoid carcinoma. In a clinical reality, although the MRI findings of high

intense on T1WI an low intense on T2WI of our case cannot supply differentiate between Warthin tumor and low grade mucoepidermoid cancer, Worthin tumor should depict high signal intensity on Diffusion WI with low ADC values while low grade epidermoid carcinoma depict should depict no high signal intensity. This finding can lead to differentiate between them.

【Summary】

We presented a sixty-four-year-old male with mucoepidermoid carcinoma that is depicted high signal intensity on T1WI and low signal intensity on T2WI which was thought that it reflects low-grade mucoepidermoid carcinoma containing metal-traces of Zn, Cu, Mn of paramagnetic substances rather than mucin in the tumor. It is borne in mind that there are three main tumors in salivary tumors: pleomorphic adenoma, Warthin tumor, and mucoepidermoid carcinoma; pleomorphic tumors are depicted high intense on T1WI, high intense on T2WI and high signal intensity on Diffusion WI with high ADC values; Warthin tumor, high or low signal intensity on T1WI (high signal intensity corresponded to high concentration of protein), mixed signal intensity on T2WI and high signal intensity on Diffusion WI with lower ADC values: mucoepidermoid carcinoma, high to low signal intensity on T1WI and mixed intensity on T2WI, various intensity on Diffusion WI depending on tumor grades (lower grades high signal intensity on T1WI, high grades low signal intensity on T1WI).

【References】

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