Case 404

4. Rathke cyst

【Progress】

The cystic lesion of pituitary gland was the same size and form as the one on MRI routinely taken on previous year. She hoped to continue rehabilitation in our hospital and scheduled to take brain MRI one year later.

【Discussion】

Why does Rathke cyst become high signal intensity on T1WIMRI? The reason is that Rathke cyst includes mucin (1-3). The signal intensity of Rathke cyst depends on the amount of mucin. Namely, the greater amount of mucin induces higher signal intensity, and the less amount of mucin induces lower signal intensity such as routine fluid pattern on T1WIMRI. The word Mucin comes from mucus that indicates viscous fluids. Mucin is glucose-protein and secreted by Goblet cells (1-3).

Pituitary gland is developmentally formed by two components: neural epithelium creates posterior lobe while pharyngeal epithelium creates anterior lobe and middle lobe. Wrapping of pharyngeal epithelium becomes anterior lobe and middle lobe. The gap created by wrapping of pharyngeal epithelium naturally disappears but when the gap remains, it is called Rathke cleft (5, 6).

Rathke cleft is gradually growing at the peak of 30ies-50ies probably because Goblet cells habituating at pharyngeal epithelium secret mucin (1-3). The autopsied cases revealed the incidence of Rathke cyst, approximately 20%, relatively higher than expected (1-3). Most Rathke cyst are less than 3cm, inducing no symptoms (5). However, as it grows, compressive symptoms come to occur such as visual disturbance by compression of optic charisma, hypo functioning of pituitary gland, elevation of prolactin and headache (5).

Based on size and/or location, Rathke cyst is graded into three types: Type 1, Rathke cyst is confined in the sella turcica; Type II Rathke cyst is beyond the upper margin of the sella turcica: Type III more than half of Rathke cyst is beyond the upper margin of the sella turcica (1-3, 5).

As described above, Rathke cyst is depicted high signal intensity on T1WIMRI because of the much existence of mucin, However, Rathke cyst is depicted also as low signal intensity because of the least existence of mucin. It is reported that when cyst of pituitary gland includes high signal nodule in low signal intensity area on T1WI, it is diagnostic of Rathke cyst that it reflects mucin nodule in clear liquid (4).

As differential diagnosis, pituitary adenoma hemorrhage, cystic pituitary adenoma, epidermoid cyst, arachnoid cyst, craniopharyngioma, are listed (1, 5-7). Of these, pituitary hemorrhage and pituitary cystic adenoma sometimes might be difficult for differentiation. In our case, annual brain MRI depicts a cyst at pituitary gland with high signal intensity on T1WI with stable size for two years, compatible with Rathke cyst.

【Summary】

We presented a forty-year-old female presented in our hospital for rehabilitation for social recovery after cardiac pulmonary arest treated by AC ECMO. Cystic lesion at pituitary gland in sellae turcica with high signal intensity is depicted on serial T1WIMRI, indicating stable in its size and signal intensity. It is borne in mind that high signal intensity of Rathke cyst on T1WI indicates mucin, signal quantity of Rathke cyst depends on amount of mucin: the more mucin induces the higher signal intensity on T1WI: the least mucin induces low signal intensity on T1WI. The high signal nodule in low signal intensity indicating mucin accumulation in clear fluids is a specific diagnostic of Rathke cyst.

【References】

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back

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