

Imaging diagnosis

Case 221

2. Angioleiomyoma or 3. Dermatofibroma

【Progress】

The patients with Case 1 and Case 2 were scheduled for resection and introduced to other expert hospital.

【Discussion】

Skin nodules are sometimes encountered in outpatient clinic. CT or MRI is available for differentiation whether benign or malignant. Lipoma is easy to identify but nodules with least fat tissue are sometimes difficult to diagnose. Of these, epidermal cyst is most common. Epidermal cyst, epidermal inclusion cyst and epidermoid cyst are pathologically identical (1-3). Cutaneous epidermal cyst is believed to arise from hair follicle, while central nervous system (CNS) epidermoid cyst arises from implantation of epidermis into dermis at beginning of fetus. It is rather related to cholesteatoma in the middle ear (4). Follicle orifice becomes plugged by keratin, inducing formation of cyst. It is covered with stratified squamous cells including keratin inside. Keratin is formed of scale which indicates dry and necrotic squamous cells. It can grow and sometimes be ruptured and infected. Epidermal cyst is basically demonstrated as high signal intensity on T2WI and slightly high signal intensity on T1WI which is characteristic (1-3). Because of including keratin debris, signal intensity inside the nodule varies. Low or mixed serpentine signal intensity inside high signal intensity on T2WI or T1WI might indicate keratin substance. Diffusion WI indicates epidermal cyst with high signal intensity probably because keratin obstacle diffusion of water molecules. However, when it ruptures with infection, it forms septum and its signal intensity changes and varies sometimes like an abscess. ADC values of epidermal cyst is around 0.8, while epidermoid cyst of central nervous system is around 1.1. This difference might be due to the difference of keratin volume (1-3).

Angioleiomyoma arises from smooth muscle layer of vessels. It is shown to be mixed signal intensity of hypointense and hyperintense on T2WI, hypointense is corresponded to leiomyoma and hyperintense, corresponded to angioma (4-6). When subcutaneous lesions are hypointense on T2WI, angioleiomyoma should be listed for differentiation.

Dermatofibroma is benign and shown to be hypointense on both T1WI and T2WI. It is absolutely be listed for differentiation in case of hypointense on T2WI.

Dermatofibrosarcoma protuberans is an intermediate malignant tumor with local progressive but rare distant metastases. Macroscopically, it colors reddish pink. It is reported that median ADC values ($\times 10^{-3}$ mm²/sec) of cutaneous benign and malignant tumors were 1.7 - 2.3 and 0.9 - 1.0 (10-12), respectively. In our previous case of dermatofibrosarcoma protuberans (Case 194), ADC values are 1.3 +/- 0.07 which is corresponded to be intermediate. This value is higher than epidermal cyst. Namely, ADC values are lower in epidermal cyst than dermatofibrosarcoma protuberans.

【Summary】

We present a twenty one-year male with a subcutaneous nodule at right foot bottom and a thirteen year-old boy with a subcutaneous nodule at his left middle finger. Both nodules showed slightly high signal intensity on T2WI and slightly high signal intensity on T1WI. But ADC values are not lowering. Non-ruptured epidermal cyst, dermatofibroma and angioleiomyoma are listed for differentiation. It is borne in mind that epidermal cyst and epidermoid cyst are pathologically identical. Both cysts include keratin which induces ADC values are lowering, although concrete ADC values are a little different (cutaneous epiderma cyst around 0.8 vs CNS epidermoid cyst 1.1.). Epidermal cysts include serpentine component inside a nodule, indicating keratin. Angioleiomyoma and dermatofibroma are listed for differentiation in case of hypointense on T2WI. Dermatofibrosarcoma protuberans is intermediate malignant whose ADC values of 1.3 are higher than epidermal cyst.

【References】

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