

Imaging diagnosis

Case 442

The differential diseases for this case should be listed: 1. A B C

【Progress】

She was introduced to the central children hospital where the brain surgeon can serve for brain tumor.

【Discussion】

Infantile brain tumors are categorized into four types from its origin: germinoma, embryonal tumor, glioma, and genetic tumor. For embryonal tumors, there are medulloblastomas, craniopharyngioma, pineal-blastoma, ependymoma. For glioma, pilocytic astrocytoma either low grade or high grade. For genetic tumors, neurofibromatosis, tuberous sclerosis, hemangioblastoma (von Hippel Lindow disease) (1, 2).

Germinoma appears in tens (average age 15), predominantly in boys (3-5). The site of germinoma is usually coming from the middle of the brain including pituitary gland, pineal body, hypothalamus, and basal ganglion. ADC values of germinoma are around 1.0 (6), while those of glioma are around 1.4 (7), indicating that ADC values are useful to differentiate them. Further, ADC values of hemangioblastoma are around 1.5 (8), indicating that ADC values are also useful to differentiate germinoma from hemangioblastoma. The treatment for germinoma is authorized to serve 24Gy/2Gy (2Gy x 12F) or 25.2Gy (1.8Gy x 14F) (9).

Infantile pilocytic astrocytoma appears as a cystic tumor which has solid components in the cystic mural. When pilocytic astrocytoma appears in the situation of least cystic components, it becomes difficult to differentiate from germinoma or hemangio-blastoma. Infantile pilocytic belongs to Grade 1 glioma according to WHO classification. The tumor size grows as the brain grows, and it regresses as time advance. When pilocytic astrocytoma appears in adults (adult type pilocytic astrocytoma), it belongs to Grade III or IV. It is reported that ADC values of adult pilocytic astrocytoma are around 0.9, indicating that ADC values are useful to differentiate malignant potential from benign.

In addition, cystic lesions with solid components are listed in various diseases such as inflammatory diseases, tumors, autoimmune demyelization diseases.

As inflammatory diseases, bacterial infection including tuberculous mycobacterium, non-tuberculous mycobacterium, mycotic infection including Aspergillosis, cryptococcus, and parasites such as toxoplasma, syphilis, amebiasis, are listed. As autoimmune demyelization diseases, multiple sclerosis, neuromyelitis optica spectrum diseases, sarcoidosis, are listed. As tumors, primary tumor, and metastatic tumors are listed.

In our patient with ages 4, cerebellar tumor is depicted on brain CT. germinoma, pilocytic astrocytoma, and hemangio-blastoma are listed for differentiation.

【Summary】

We presented four-year-old girl with persistent headache for four days. Cerebellar tumor with soft-tissue density is depicted on brain CT. Germinoma, cystic pilocytic astrocytoma, hemangioblastoma are listed for differential diagnosis. It is borne in mind that ADC values might be useful for differentiating malignant from benign, because ADC values of germinoma are around 0.9, while those of hemangioblastoma and pilocytic astrocytoma are around 1.3 or greater.

【References】

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