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Case Report

Brainstem Glioma: Contribution of Magnetic Resonance Spectroscopy -

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ABSTRACT

The exploration MRI of brain tumors in children based on a dual morphological and metabolic SRM. The latter takes place more and more important in the characterization of expansive processes. MRS is an important complement to morphological MRI. In infiltrating low-grade glioma of the brainstem, it can predict the nature of glial tumor expansive process by showing elevation of the Cho / Cr and the low grade of the tumor consistent with morphological imaging (no enhancement) showing an increase of myoinositol.

Keyswords : Glioma; Brainstem; MRI Spectroscopy

MI child aged 6 years, admitted for exploration headache with gait disorders and swallowing. Physical examination revealed ataxia with esotropia. A brain CT was performed in the first intension before and after injection of contrast (PDC) iodized, noted the presence of an expansive process sitting at the unmodified by injecting PDC heterogeneous hypodense protuberance.

Complement MRI (combining double and three-dimensional morphological study metabolic by SRM) confirmed the presence of a pontine mass heterogeneous T1 hypointense and T2 hyperintense not enhanced after intravenous injection of gadolinium exerting a mass effect on the V4 with deletion of pre pontine cistern and circumferential engrainement the basilar artery (Figure 1). MRS (Figure 2) was a significant elevation peaks of choline and myoinositol associated with a marked decrease in N acetyl aspartate (NAA) and the ratio NAA / Creatine. The diagnosis of low-grade glioma infiltrating the brainstem was heavily discussed. The patient was supported in radiotherapy.

The brain stem gliomas account for 20 to 30% of tumors of the posterior fossa of the child and are often diagnosed during the first decade with a peak incidence between 5 and 6 years [1]. MRI imaging

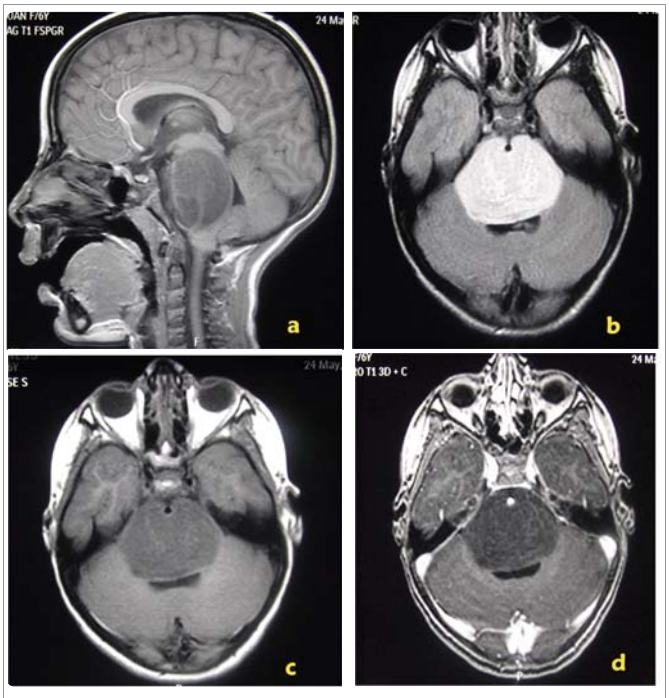

Figure 1: MRI. Morphological study. Sagittal T1 sequences FSPGR (a), axial T2 Flair (b) FSE T1 (c) and ESF T1 gadolinium (d). Presence of a heterogeneous hypointense mass pontine T1 T2 and not enhanced after intravenous injection Gadolinium exerting a mass effect on the V4 with deletion of pre pontine cistern and engrainement circumferential basilar.

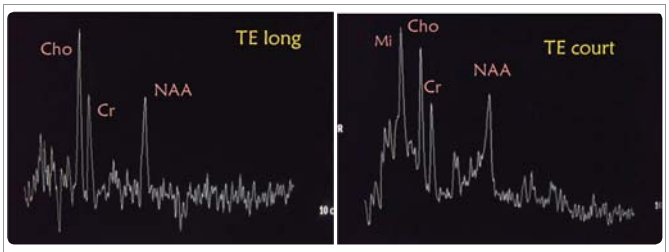

Figure 2: MRI. Study metabolic SRM. Important elevation of the peaks of choline and myoinositol associated with a marked decrease in N acetyl aspartate (NAA) and the ratio of NAA / creatine.

is of choice. Thanks to its high resolution and tissue characterization, MRI allows a detailed study of these tumors which will depend on the therapeutic approach and prognosis. It allows to classify gliomas according to their topography (midbrain, pons, medulla) and their morphology (diffuse or focal infiltrative exophytic).

And diffuse infiltrating gliomas are the most common, they sit preferentially at the protrusion (40-60% of cases). The tumor is unclear boundaries and irregular surface, often intense and homogeneous T1 hypo, hyper moderate or intense and homogeneous T2 signal with limits that are sharper than T2 T1, with enhancement after gadolinium injection not common. The mass is responsible for expanding the reach of the trunk segment, a discharge from the floor of V4 backwards and erasing the cisterns of the posterior fossa with filling of the pre-pontine cistern and angles ponto- cerebellar and basilar sheathing. The T1-weighted sagittal plane is essential for the upward extension of the tumor, while the axial plane above allows signal analysis of the tumor [2].

Metabolic study SRM is currently a further essential morphological imaging with conventional exploration sequences. It allows a precise approach to the type and histological grade noninvasively and therefore gives an idea about the degree of aggressiveness of the tumor, to clarify the different components of a tumor and its limitations to better delineate the resection surgery or radiotherapy target and monitor its evolution after the initiation of treatment. In favor of a tumor cell proliferation, in the detection of short and long echo increased rate of choline with a moderate reduction of NAA and NAA / Cr [3-4] ratio.

The spectral profile of gliomas is characterized by an increase of myoinositol. The SRM can help in the differentiation of low-grade tumors of the high grade. Glial low-grade tumors have lower choline peak with a moderate increase in Cho / Cr and Cho / NAA associated with a significant increase in myoinositol reports. Against by the high-grade tumors are characterized by a significant increase in Cho / Cr and Cho / NAA ratios with presence of peaks of lipids and lactate.

MRS can determine the extent of glial tumors precision, indeed it allows to distinguish between vasogenic edema reaction peri tumor,

presenting a normal metabolic profile, and tumor infiltration, which will instead be characterized by an increase choline and decreased NAA. MRS also used to evaluate the therapeutic response in post radiation resulting in a decrease of choline with NAA and increased differentiation of tumor recurrence radionecrosis. The latter results in a collapse of the metabolites, associated with the presence of free lipids in massive quantities. If a tumor activity persists, it will be observed, however, a persistent elevation of choline [5].

Finally MRI with its dual morphological and metabolic study predicts the prognosis depends mainly on the location of the tumor, its size, diffuse or focal and its histological grade. The latter represents the most important prognostic factor. Bulbar and midbrain tumors are often focal and low grade. The protuberantielles tumors have worse prognosis because often invasive and high grade, which is in contradiction with our case is infiltrating pontine and location but low-grade, representing an unusual form of brain stem gliomas seat pons.

The SRM is a significant addition to the morphological study on MRI. In infiltrating glioma low grade brainstem, it allows to predict glial tumor expansive nature of the process, showing an increase of Cho / Cr ratio and the low grade of the tumor consistent with morphological imaging (no enhancement) showing an increase of myoinositol.

REFERENCES

1. Thiesse P. Imagerie des tumeurs cerebrales chez lenfant. Techniques et strategie dexploration. Tumeurs sous tentorielles. EMC. 31-626-A-10. https://goo.gl/jJju9r
2. Couanet D, C Adamsbaum. Imagerie des tumeurs cerebrales de lenfant. J Radiol. 2006; 87: 732-747. https://goo.gl/NMJ23C
3. Galanaud D, Nicoli F, Figarella-Branger D, Roche P, Confort-Gouny S, Le Fur Y, et al. Spectroscopie par resonance magnetiquedes tumeurs cerebrales. J Radiol. 2006; 87: 822-32. https://goo.gl/zSHz9j
4. Galanaud D, Nicoli F, Confort-Gouny S, Le Fur Y, Dormont D, Girard N, Ranjeva JP, et al. Spectroscopie par résonance magnétique cérébrale. J Radiol. 2007; 88: 483-96 https://goo.gl/Hurmzb
5. Le Bas JF, Esteve F, Grand S, Rubin C, Remy C, Benabid AL, Decorps M, et al. Spectroscopie RMN et pathologie cérébrale. Applications cliniques. J. Neuroradiol.1998 ; 25 : 55-69. https://goo.gl/mLhuWU