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Report 2013: Tumors of the pineal region

Tectal plate tumours. Our experience with a paediatric surgical series

Tumeurs de la lame tectale. Notre expérience chirurgicale avec une série pédiatrique de 27 patients

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ABSTRACT

Introduction. – Exophytic tectal plate tumours are a particular kind of brain stem tumour that can be treated with microsurgical resection. This paper reports our surgical experience with a paediatric series stressing and underlines the fact that this surgery can be possible because the rate of surgical mortality is low in experienced hands with acceptable morbidity.

Material and methods. – From 1997 to 2010, 27 patients were treated for exophytic tectal plate tumours. The clinical symptomatology was characterized by an intracranial hypertensive syndrome in 77% of cases, visual disorders in 36% of cases and a Parinaud's syndrome in 12% of cases. All patients were studied using a pre-operative cranio-spinal MRI with and without gadolinium. Hydrocephalus was present in 20 cases treated with a VP shunt in 6 cases and an ETV in the other cases. The surgical removal was total in 60% of cases, partial in 28% of cases and only a large biopsy in 12% of cases. From an histological point of view benign gliomas were diagnosed in 84% of cases and in 16% of cases were classified as WHO grade II and III. Eight patients needed complementary treatment, four with chemotherapy and four with chemotherapy associated to radiotherapy. As a surgical complication two patients had hydrocephalus, one patient had a sub-dural acute haematoma, two patients had an infectious complication requiring surgical treatment and antibiotic therapy, and 5 patients a mechanical shunt dysfunction. No post-surgical mortality was observed.

Results. – The most recent results after a median survival of 4.3 years show that 22 patients are still alive while 5 patients died of a progressive disease. Twenty patients in school age continue to follow a normal school programme but 10 patients need assistance.

Conclusion. – Exophytic tectal plate tumours can be treated based on a microsurgical approach in paediatric patients. In experienced hands surgery can be performed with an acceptable morbidity and with zero percent mortality. In our experience, the sub-occipital transtentorial approach permits a wide view of the region and safe surgical removal.

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R É S U M É

Introduction. – Les tumeurs exophytiques de la lame quadrijumelle peuvent être traitées chirurgicalement. Nous présentons notre expérience chirurgicale à propos d'une série pédiatrique en soulignant le fait que cette chirurgie peut être réalisée avec une faible morbi-mortalité dans les mains de chirurgiens expérimentés.

Patients et méthode. – Sur la période 1997–2000, 27 patients ont été traités pour une tumeur exophytique de la lame quadrijumelle. La symptomatologie clinique a été représentée par un syndrome d'hypertension intracrânienne dans 77% des cas, des troubles visuels dans 36% des cas et un syndrome de Parinaud dans 12% des cas. Tous les patients ont bénéficié d'une IRM cranio-spinale sans et

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avec gadolinium. Une hydrocéphalie était présente dans 20 cas, traitée par une dérivation ventriculo-péritonéale chez 6 patients et par une ventriculocisternostomie endoscopique dans les autres 14 cas. Du point de vue histologique, 84 % des cas présentaient des gliomes bénins, et dans 16 % des cas des gliomes de grades II–III. Huit patients ont eu un traitement complémentaire : quatre avec chimiothérapie et 4 avec chimiothérapie associée à une radiothérapie. Dans les suites postopératoires, 2 malades ont présenté une hydrocéphalie, un patient a présenté un hématome sous-dural aiguë, deux patients une complication infectieuse traitée par antibiothérapie, cinq patients un dysfonctionnement de la dérivation. Aucune mortalité post-opératoire n'a été observée.

Résultats. – Les résultats tardifs après un suivi moyen de 4,3 ans ont montré que vingt-deux patients sont vivants et cinq sont décédés pour une maladie évolutive. Vingt patients sont en âge scolaire, douze sont capable de suivre une scolarité normale et dix une scolarité normale avec un programme adapté.

Conclusion. – Les tumeurs exophytiques de la lame quadrijumelle de l'enfant peuvent être traitées chirurgicalement dans des mains expérimentées. Cette chirurgie peut être réalisée avec une morbidité acceptable et une mortalité de 0%. Dans notre expérience, l'abord sous-occipital trans-tentorial permet une large vue de la région et une exérèse chirurgicale aisée.

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1. Introduction

Tectal plate tumours are brain stem lesions and their incidence represents 10 to 25% of all paediatric tumours of the CNS. MRI has permitted greater diagnosis but it is difficult, in some cases, to distinguish them from true pineal tumours.

MRI has also permitted to show the increasing potential capacity of reaching a surgical decision, in these cases, possible (Figs. 1 and 2).

Lapras in 1994 reported his surgical experience with exophytic tectal plate tumours and can be considered one of the pioneers of this surgery [1].

In fact, by removing a pineal region tumour at the end of the surgical procedure he could observe that the pineal gland was in place while the tectal plate was completely removed and the plane of the aqueduct of Sylvius exposed (Figs. 3 and 4).

In this way, the route for the surgical removal of exophytic tectal plate tumours was opened and in Lyon, as in other neurosurgical centers, this surgery was performed either in children or in adult patients because these tumours generally have a benign course [2].

Tectal gliomas are generally low-grade astrocytomas and are considered as a benign subgroup of brain stem gliomas. Their treatment is not completely defined but well differentiated gliomas can be cured with only a microsurgical removal [3].

Their incidence is mainly in the third and fourth decades in adult patients while in children the peak of incidence is at ten years [4].

We report our experience with tectal plate tumours that represent nothing else than a glioma of the pineal region and we consider that generally pineal gland gliomas are tectal plate tumours. This experience concerns a retrospective review of exophytic tectal plate gliomas, a special subgroup of brain stem tumours, that differ from other intrinsic gliomas of the tectal plate with an indolent clinically stable nature [5,6].

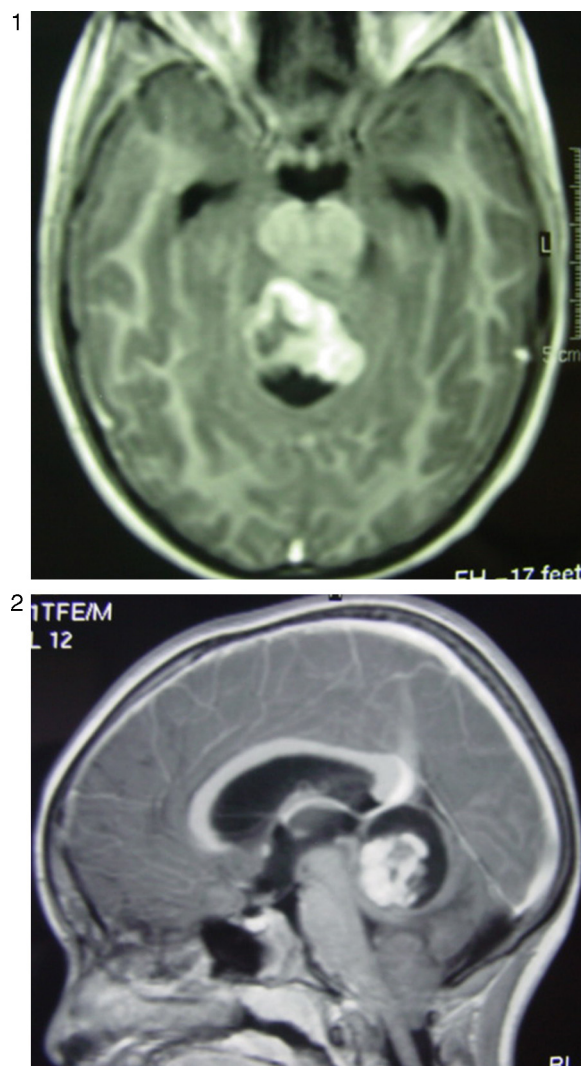
2. Clinical material and methods

From 1997 to 2010, we treated 27 paediatric age patients for a tectal plate tumour.

The age ranged from between two years to 16 years for the oldest patient. The mean age at diagnosis was 7 years and 4 months. We observed two incidence peaks at eight and at eleven years. We did not observe a great difference in gender distribution with 12 boys and 15 girls.

From a clinical point of view, 77% of patients presented with clinical signs of intracranial hypertension.

In 36% of cases, patients had visual disorders and in 42% of cases a papillary oedema and in 12% of cases Parinaud syndrome.



Figs. 1 and 2. Radiological images of an exophytic tectal plate tumour.
Images radiologiques d'une tumeur tectale.

In 11 cases (42%), signs of a cerebellar syndrome were present, an associated hearing loss in 8% of patients and a nystagmus in 19% of cases.

Twenty-two patients were studied at the beginning with a CT-scan but all had a cerebral MRI associated with a spinal MRI based

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