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Meningiomas/Les méningiomes

## Ethics and meningiomas: From prudence to obstinacy? The position of the neurosurgeon (for treatment or insurance purposes) in the case of complaints concerning post-operative clinical deterioration

*Éthique et méningiomes : entre prudence et acharnement. Le positionnement du neurochirurgien (traitant ou expert) en cas de recours pour aggravation clinique post-opératoire*

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### ABSTRACT

To treat or not to treat an asymptomatic or pauci-symptomatic benign meningioma, that is the question. And if treatment is necessary, what is the best technique: radical resection, sub-total resection or radiotherapy? This question is also pertinent for meningiomas of the skull base, posterior part of the sagittal sinus, anterior part of the foramen magnum and cerebellopontine angle. When the results of the treatment are good, the patient and the surgeon are satisfied. But when a new neurological deficit appears after the treatment, the patient is entitled to obtain compensation. What should be the position of the specialist medical assessor in this situation when the prognosis of these benign tumors is unknown? Is the preoperative information that is due to the patient complete, objective and sufficient? Is the therapeutic indication unquestionable? Is the technique irreproachable? For meningiomas, there is no "evidence-based medicine"; the therapeutic option is often based on the personal experience and/or the education of the surgeon and thus is, in fact, highly subjective.

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### RÉSUMÉ

Traiter ou ne pas traiter un méningiome bénin asymptomatique ou paucisymptomatique, telle est la question. Et si un traitement est décidé, quelle est la meilleure technique : résection totale, résection partielle ou radiothérapie ? Cette question est aussi pertinente pour les méningiomes de la base du crâne, de la partie postérieure du sinus sagittal, du bord antérieur du foramen magnum et de l'angle ponto-cérébelleux. Quand le résultat est bon, le patient et le chirurgien sont satisfaits. Mais quand s'installe un nouveau déficit post-opératoire, le patient peut demander et obtenir une indemnisation. Quelle doit être la position de l'expert désigné dans la mesure où le pronostic de ces tumeurs est mal connu ? L'information préopératoire due au patient est-elle complète, objective et suffisante ? L'indication opératoire est-elle indiscutable ? La technique choisie est-elle irréprochable ? Pour les méningiomes, il n'existe pas d'evidence-based medicine, l'option thérapeutique est souvent fonction de l'expérience personnelle et/ou de la formation du chirurgien et en fait très subjective.

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## 1. Introduction

The ethics of the medical profession and in particular of the neurosurgeon mean that the patient should be offered the treatment that presents the best benefit/risk ratio and respects the state of the art. This is implicit in the Hippocratic Oath and is embedded in numerous legislative and regulatory texts.

In France, the law of March 4th 2002 has profoundly modified the physician–patient relationship: except for emergencies or in a few very particular cases, the patient must give their consent freely to the treatments offered, based on the information supplied.

How can these general rules be applied to the particular case presented by grade 1 meningiomas, which are known to be slow-growing and unpredictable? It is clear that tumors that are symptomatic and/or growing should be treated. It is less obvious for asymptomatic tumors or those where the benefit/risk ratio of treatment is difficult to evaluate.

My career as a neurosurgeon has now reached its term; I have always been particularly interested in meningiomas and have operated on many of them, and I have served as a specialist medical assessor to the courts since 1980 and to the CCI (Commissions de conciliation et d'indemnisation, one in each administrative region) since its founding in 2002. Many questions have arisen as to the pertinence of surgery and I would like to share in this article some of my thoughts on certain aspects of meningiomas:

- asymptomatic meningiomas fortuitously discovered, as well as those discovered during investigations into neurological symptoms for which they are obviously not responsible;
- pauci-symptomatic meningiomas revealed for example by banal analgesic-sensitive headaches or the onset of epileptic seizures;
- meningiomas in the functional area – what our American colleagues call the eloquent zone – with cortical invasion and/or predominant vascularization by the capsular pedicle (by the way, is an arteriography routinely carried out in order to evaluate the angio-architecture of the lesion?);
- strategic topography meningiomas that indicate (but not exhaustively) the tumors that invade the posterior half of the sagittal sinus and/or the Rolandic veins, the cavernous sinus, the cerebellopontine angle, the skull base in its central part, etc.;
- although new technologies definitely represent progress, they may well complicate or lengthen procedures with no direct benefit for the patient, and even in some cases they may give rise to specific complications.

According to the data provided by the SHAM (Société hospitalière d'assurance mutuelle) which insures almost 70% of public hospitals – except for AP-HP (health establishments of Paris and its region) which is self-insured –, there are about 250 complaints every year concerning neurosurgery (except spinal surgery), i.e. 7% of all complaints concerning surgery for all establishments, but 15 to 20% of complaints for hospitals with a neurosurgical department. These figures have been relatively stable over the last few years. For intracranial pathology, the most frequent complaints concern meningiomas, tumors of the sellar region, and asymptomatic vascular malformations. In about a third of the cases, damages are awarded by the CCI; this rises to 50% if the claims are taken to the courts.

Three recent examples from my personal experience as court assessor:

- a 56-year-old woman who presented with a “typical” amnesic ictus. Her doctor prescribed a CT scan that showed a meningioma of the left sphenoidal ridge in contact with the sylvian artery clearly visible on the slices after injection of contrast medium. There was no angiography. Surgery was performed. During the

operation a lateral lesion of the sylvian artery was performed. When the patient regained consciousness, she was hemiplegic and aphasic, there was only minor clinical improvement, and the permanent residual functional deficit was estimated at 85%;

- a 40-year-old woman complained of recent headaches and a unilateral loss of her visual acuity due to a meningioma of tubercular sella. The operation was performed by transnasal approach and complicated by meningitis (with favorable outcome) and a severe chiasmatic syndrome. The permanent functional deficit was estimated at 50%, minored by the preoperative deficit;
- a 56-year-old woman suffered a decline in visual acuity for several years attributed to a refractive pathology. It was in fact related to a chiasmatic syndrome that led to the discovery of a meningioma of the tubercular sella. Surgery was performed by a transnasal route. Post-operative complications included meningitis that resulted in non-communicant hydrocephalus. This hydrocephalus evolved according to Murphy's law: failure of endoscopic ventriculostomy, obstructions of internal derivation, iatrogenic Chiari abnormality, exclusion of the fourth ventricle, syringomyelia, etc. Two years later, the patient was in intensive care, tetraplegic with artificial mechanical ventilation.

## 2. How to reach a decision in each particular case?

Without taking into account the age factor, the general condition of the patient and the generally accepted outcome prognoses, the therapeutic decision (indication and technical choices) may vary from one surgeon to another.

First of all the decision can be the result of personal experience which in turn depends on the number of meningiomas already operated on, the kind of training received, the mastery of new technologies, (including radiosurgery); the choice may also be influenced by the age of the surgeon, experience and prudence being correlated with the number of grey or white hairs, etc. It must be said that it is often the younger surgeons who are most at home with the newest technologies.

Can the literature be of help? For meningiomas, are there any level one publications out there?

The most exhaustive analysis of the literature does not make it possible for us to have a clear and objective idea of the post-operative mortality and morbidity for grade 1 meningiomas, taking into account all topographies. Most of the pertinent articles are written by the most experienced teams who obtain the best results, and it is difficult to extrapolate these results to all surgeons; at the same time, the articles are often limited to particular topographies or age groups, for example the young or the very old.

Moreover, as far as complications are concerned, there are considerable discrepancies between the rates published in the major papers and those calculated on the basis of epidemiological data. For example in the first month post-operative mortality is nil for the 92 patients of Poon et al. [1]; 4.6% for patients under 70 and 12% for the others for Patil et al. [2] whose study included 1281 patients from 123 centers. The same article mentions that at least one complication arose in 29.8% of patients over 70 and in 13.1% of younger ones.

In another article, Poon et al. [3] publish a meta-analysis of the articles written between 2002 and 2012 concerning 7010 patients over 65: the mortality rate is 6.6% for 90 days and 9.6% for one year. The rate of complications varies between 2.7 and 29.8%, with an average of 20% per patient (from 3 to 61%).

There have been few studies regarding the quality of life after removal of a meningioma. Jakola et al. [4] carried out a study on 54 patients: only about 50% of patients said they had experienced significant improvement; one in five patients complained that their

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