

# PITUITARY TUMOURS NEUROSURGERY

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**Abstract:** This paper is an introduction in surgical indications of the pituitary tumours, representing a therapeutic option with interest, both for endocrinologists and for neurosurgeons. We present an etiopathogenic classification of the pituitary adenomas and a few considerations concerning their evolution. In conclusion: the indication for surgery is based on the morphologic evolution of the tumour, as well as on the hormonal changes induced by the tumour growth.

**Keywords:** pituitary tumour, neurosurgery, etiopathogenic classification

**Rezumat:** Prezentul articol face o introducere asupra indicațiilor chirurgiei tumorilor hipofizare, care reprezintă o alternativă terapeutică de interes, atât pentru endocrinologi, cât și pentru neurochirurgie. Se prezintă o clasificare etiopatologică a adenoamelor hipofizare, precum și câteva considerații asupra aspectului evolutiv. În concluzie, indicația operatorie depinde de evoluția morfologică a formațiunii tumorale, iar pe de altă parte, de modificări hormonale induse de dezvoltarea ei.

**Cuvinte cheie:** tumori hipofizare, neurochirurgie, clasificare etiopatogenică

The surgery of the pituitary adenomas still remains a present interest despite the numerous progresses in the drugs treatment, allowing a better tolerance and a better control of the hormonal hypersecretion in the secretory tumours (1).

At the same time, the performances of imagery significantly increased. Surgery indications have not been diminished due to four major reasons:

- Only the surgery may allow the cure if it has been complete and selective;
- Drugs treatment proved their limits regarding the reduction of the tumoral size, regarding the tolerance and the cure;
- Certain tumours are not accessible to the medical treatment, for the moment, especially the non-secretory pituitary adenomas or gonadotropes;
- Radiotherapy has the well known side effects.

The majority of pituitary adenomas are operated transphenoidally. The indications of the cranial ducts are valid only for certain tumours with suprasellar

significant development and, especially regarding the craniopharyngiomas. In certain particular cases, the stereotactic biopsy with computer-guided assistance may represent an interesting alternative in certain uncertain pituitary affections.

Other parasellar lesions may provoke a hypothalamic sufferance with a certain influence in the hypophyseal function. On the other hand, certain very rare ectopic hypophyseal adenomas are totally supradiaphragmatic.

## ETIOPATHOGENIC CONSIDERATIONS

The majority of the sellar tumours are the hypophyseal adenomas, with possible varieties of lesions: craniopharyngioma, Rathke's cleft cyst, hypophyseal metastases, abscesses.

There also exist a number of hypophyseal lesions whose diagnosis is made through the anatomopathological and immunohystic study: hypophyses hyperplasia, sarcoidosis, granulous cell tumours or choriostoma.

Hypophyseal adenomas are often plurisecretory and the possibilities of treatment may be different in such cases. On the other hand, the absence of an immunomarker attesting the non-secretory character of the tumour, hypothetically makes impossible the medical treatment, remaining only the surgical one that aims at the reduction of the tumour size.

## CLASSIFICATION OF THE HYPOPHYSEAL ADENOMAS

Hypophyseal adenomas may be:

- functional, secretory
  - prolactinoma
  - somatotrope
  - corticotrope
  - tireotrope
  - mixt
  - silent
- non-functional and gonadotropes
  - craniopharyngioma
  - Rathke's cleft cyst,
  - colloid cyst
  - metastases

## CLINICAL ASPECTS

- abscess
- granulous cell tumours

### HYPOPHYSIAL ADENOMAS

As a result of the immunochystic progresses, the hypophysial adenomas are classified into: secretory and non-secretory. The majority of the secretory adenomas manifest through clinical changes corresponding to the hormones type in excess:

- acromegaly or acromegalogigantism regarding somatotrope adenomas;
- amenorrhea - galactorea in women, impotence and ginecomastia in men, regarding the prolactin adenomas;
- Cushing disease regarding the basophile-type secretory adenomas.

In a reduced number of cases, the secretory adenoma does not produce particular clinical changes. Only the immunomarker may affirm the hormone in excess. In these cases, adenomas are classified as silent.

Non-functional adenomas are recognized late, regarding the visual symptomathology. In some cases, they are recognized by chance.

### DIFFERENT ANATOMIC TYPES AND THEIR EVOLUTIVE ASPECT

Classically, there are microadenomas under 10 mm and macroadenomas of sizes larger than 10 mm. This old distinction does not have any other advantage, except for the fact that it gives us the possibility of comparing the series and results and to foresee the accuracy of the quality of exeresis.

According to their development and size, on the moment of their detection, macroadenomas present formations that exceed the pituitary fossa, in many ways:

- Suprasellar perichiasmatic median expansion;
- Expansion above the jugum sphenoidale;
- Sphenoidal lower expansion.

Certain lateral or median expansions communicate with the intrasellar adenoma through a narrow channel: retrochiasmatic expansion, extension towards the cavernous sinus, temporal lobe, optic band.

Irrespective of the size of the adenoma, it may remain included. The invasive character usually belongs to the macroadenomas, but signs of local invasion may also exist for certain paracarvenous microadenomas.

### EVOLUTIVE MODALITIES

Volumetric increase of an adenoma is slow. In the stage of microadenomas, only the hormonal effects are serious and may lead to surgery.

Macroadenomas tend to suffer a degenerescence and/or bleeding, confirmed only through IMR imagery, or they are silent and accomplish a subarachnoid haemorrhage, accompanied or not by a visual or oculomotor signs and by a hypophysial insufficiency. There are few rare hypophysial

adenomas, extremely invasive and resistant to any treatment: they are considered as hypophysial carcinomas in which metastases were very rarely seen.

### CRANIOPHARINGIOMA

Craniopharingioma is a bening epithelial tumour, most frequently localised at suprasellar level and rarely in the pituitary fossa, ventricle 3 or in the infrasellar region, according to its implementation basis. Its embrionary origin is generally admitted. It is responsible for the development delay, obesity, hypophysial insufficiency more or less completed by insipid diabetes (2).

Regarding the suprasellar forms, the visual signs may be major, especially in children, cases in which the detection is late.

Regarding the hypothalamic localizations, the metabolic disorders may be extremely important. In adults, there are the metabolic disorders on the first place, followed by the insipid diabetes, the visual signs and the amnesic disorders.

### RATHKE'S CLEFT CYST (3-6)

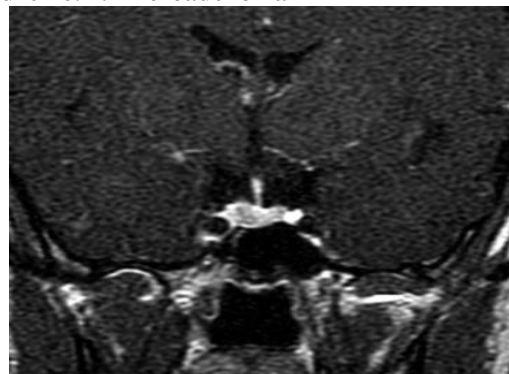
Its origin is also embrionary. Rathke's cleft cyst usually occurs in the fourth intrauterine week. It will represent the origin of antehypophisis, the front side representing pars distalis, while the back side - pars intermedia. If the lumen is not closed physiologically, it is possible that a cyst should be formed between the front lobe and the intermediary one.

From the histological point of view, it is made up of a pseudo-stratified epithelium. The clinical manifestations are those with local mass effect, including hypophysial dysfunction, headaches, visual signs and often hyperprolactinemia. Its association with adenoma is possible. The intrasurgical aspect is usually described as a jelly-like yellow liquid.

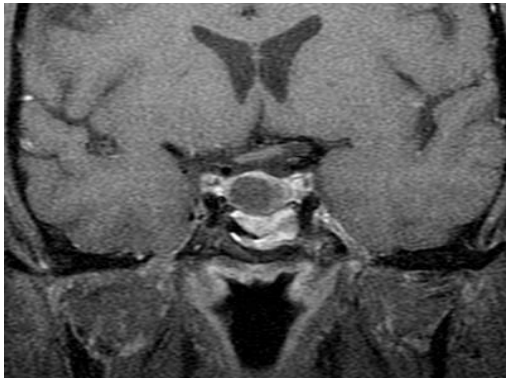
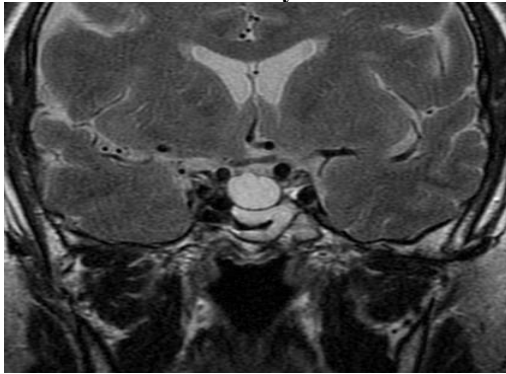
### OTHER HYPOPHYSIAL LESIONS

These are more rare, some of them occurring within a particular context of known primary neoplasia (breast or lung metastases) or of serious septicaemia (hypophysial abscess). There also are other anatomomorphological discoveries: hypophysitis, granulous cell tumours (7).

Picture no. 1. Microadenoma



**Picture no. 2. Rathke's cleft cyst**



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**Picture no. 3. Prolactinoma with suprasellar expansion**



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