

## Central nervous system germinoma with triple localization: A case report

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### Abstract

Germinoma of the central nervous system are rare. We report the case of a 14 year old girl who presented with a pituitary tumor syndrome. Brain MRI showed a triple localization of germinoma tumor in suprasellar, mesencephalic and pineal regions; a stereotaxic biopsy confirmed the diagnosis of germinoma which was successfully treated by radiotherapy and chemotherapy.

The prognosis in children is excellent because of their chemo- and radiosensitivity.

**Keywords:** Cerebral germinoma; Tumor markers; Radiation therapy; MRI.

### 1. Observation

A 14years old girl, consulted for a pituitary tumor syndrome associated with polyuria and polydipsia. The clinical examination noted a Parinaud syndrome.

On the radiological level: MRI cerebral revealed a lesion of the sellar region extended suprasellar, in heterogeneous isosignal T1 and T2, close a zone in T2 hyposignal, T1 isosignal surrounded by a border in T1 hypersignal, in T2\* signal void, in relation to hemorrhagic changes, enhanced after injection and measuring 21 x 18 x 16 mm with a 2nd process of the pineal region presenting the same characteristics signal and enhancement, measuring 14 x 11 mm associates with a lesion of the mesencephalic and pontine tegmentum, oblong, in moderate hypersignal T1, iso signal Flair, without restriction of diffusion, surrounded by perilesional edema, enhanced after injection and measuring 26x 15 mm, suggesting a germinoma a triple localization.

The patient has benefited from an endonasal biopsy, histological analysis confirms the diagnosis of germinoma as well as the tumor marker dosage: came back positive, spinal cord MRI did not reveal any spinal cord extension.

Chemotherapy and radiotherapy were subsequently initiated, resulting in complete remission.

### 2. Discussion

Germinomas of the central nervous system with multifocal localization remain rare. Several authors report a tumor localization generally involving the pineal, suprasellar or hypothalamic region[1;2]. Spinal localization remains exceptional. The multifocal nature of the tumor explains the varied clinical presentation.

The clinical expression is polymorphic and associates with a HIC syndrome oculomotor disorders as well as an endocrine syndrome by unfundibular compression explaining the diabetes insipidus which is accompanied by anterior

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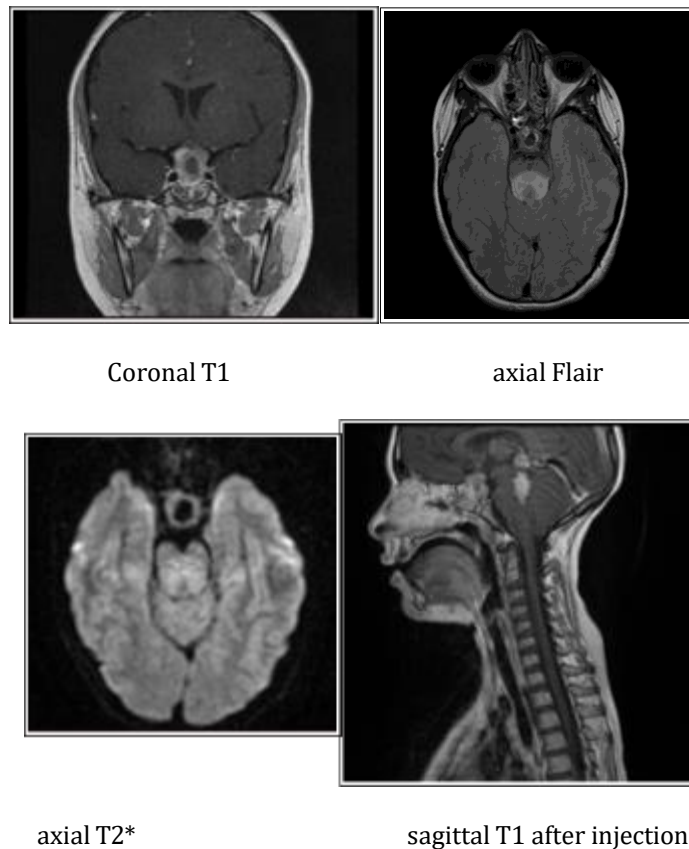
pituitary deficiency. In approximately half of the cases, there is moderate hyperprolactinemia indicating damage to the pituitary stalk.

Brain imaging provides very suggestive radiological semiology MRI is the essential examination Germinoma usually appears a well-defined mass, iso intense in T1 and iso or hyper intense in T2, taking up gadolinium homogeneously. The brain scan reveals a well-defined, homogeneous, round or lobulated, iso or hyperdense mass in the pineal or suprasellar region, enhancing after injection of contrast product.

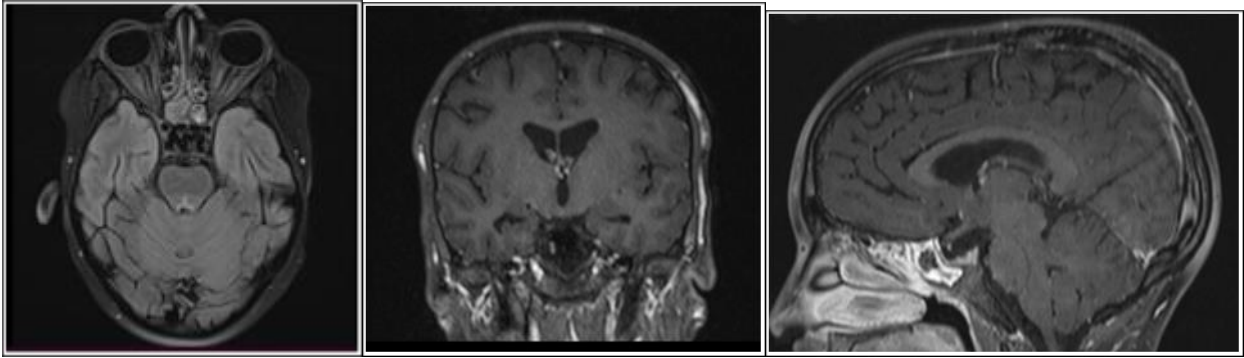
The diagnosis of certainty is based on histological data, but the new diagnostic means represented by tumor markers and modern imaging can lead to a sufficient presumption to start a treatment based on radiotherapy and chemotherapy. Indeed, several authors have concluded that median multifocal localizations are associated only with germinomas, making biopsy unnecessary. The search for tumor markers in the blood or CSF is systematic because their positivity is sufficient to diagnose a less differentiated secreting form, thus any elevation of  $\alpha$ FP excludes the pure form, and requires more intensive therapy. The absence of tumor markers makes it possible to eliminate secreting malignant germ cell tumors

The spread of this tumor occurs mainly via the leptomeningeal route.

Treatment is mainly based on radiotherapy, and sometimes on a combination of radiotherapy and chemotherapy.



**Figure 1** MRI sections cerebral showing a germinoma triple localization sellar and suprasellar, pineal and mesencephalic before treatment



**Figure 2** Control two years after treatment with chemo and radiotherapy, showing a clear regression.

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### 3. Conclusion

Germinomas at triple location cerebral remain rare in the literature, the clinical expression is polymorphic and Brain imaging provides considerable assistance in diagnosis, treatment is mainly based on radiotherapy, and sometimes on a combination of radio and chemotherapy with good clinical, biological and radiological progress.

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### Compliance with ethical standards

#### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

#### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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