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CLINICAL STUDY

A rare case of malignant extragonadal germ cell tumor in the pineal region with an aggressive behaviour

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Abstract: Though germ cell cancer is rare, it is the most common cancer in males between 20 and 40 years. The primary site for the development of germ cell tumor is testes, but it can be seen in extragonadal locations as well. Herein, we present a rare case of a 19-year old patient with non/seminomatous extragonadal germ cell tumor in the pineal region with an aggressive behaviour, refractory to the combined therapy (surgery, radio- and chemotherapy). We suggest that early diagnosis and aggressive multimodal approaches along with surgery, radiotherapy and chemotherapy is necessary to improve the outcome of these patients *(Ref. 5)*. Full Text (Free, PDF) *www.bmj.sk.*
Key words: extragonadal germ cell tumor, pineal tumor, radiotherapy, chemotherapy.

Germ cell tumors represent a model of successful, highly treatable malignancy, even in advanced disease, with curability rate from 70 to 80 %. Although germ cell cancer is quite rare (represent 1 % of all malignant tumors), it is the most common cancer in males between 20 and 40 years.

There are two main histological types of germ cell tumors: seminomas and non/seminomatous germ cell tumors. Treatment and prognosis depend on the histological type, the site of primary tumor and extent of malignant disease. Even though the primary site of germ cell tumor is testes, it can develop in extragonadal locations as well, for example in mediastinum, retroperitoneum, sacral or pineal region. Extragonadal germ cell tumors are rare and account for only 3–5 % of all germ cell tumors. The exact incidence of extragonadal pineal germ cell tumors is unknown. The tumors are extremely rare and the number of patients with these tumors, reported in clinical series, is limited. The majority of pineal tumors are seminomas (73–86 %). Patients with seminomas have the highest survival rate (>79 % at 5 years). Most of these patients are treated with surgical resection and radiation therapy or with the radiation therapy alone. There are several cases in literature documenting the behaviour of pineal non-eminomatous germ cell tumors (1).

It is often problematic to make an early diagnosis of intracranial tumor as it can grow for a long time without any symptoms (2). The typical clinical manifestation consist of general symptoms of intracranial hypertension (including headache, nausea, vomiting and visual changes, which lead to early diagnosis) and specific symptoms determined by the brain structures irritation (visual disturbance, endocrine dysfunction, movement disorders, enuresis, anorexia and psychiatric complaints, which often delay diagnosis). Laboratory findings of elevated serum level of alpha fetoprotein (AFP) or serum human chorionic gonadotropin (hCG) with typical clinical behaviour are usually sufficient for a diagnosis (3).

Despite good results in literature using the combination therapy, including surgery, radio- and chemotherapy regimens, none of them has been accepted as a standard therapy for pineal non-seminomatous germ cell tumors yet (4). The rapid onset and aggressive behaviour of the disease in our case warrants the need of prompt diagnose and continuous search for a more effective therapy. Herein, we present a rare case of a 19-year old patient with non-seminomatous pineal germ cell tumor with an aggressive behaviour refractory to combined radio- and chemotherapy.

Case report

A 19-year old boy without previous disorders attended the neurologist with visual disturbance lasted approximately for two weeks with a progressive development of diplopia, bilateral tension headache in temporal regions and vomiting four-five times during the past week. An objective neurological examination revealed the trunk syndrome with diplopia, horizontal nystagmus and Parinaud's syndrome. A computed tomography of the brain (CT) showed a tumor in the pineal region extended to the thalamus, posterior side of the third ventricle with incipient internal hydrocephalus. Laboratory serum AFP level was elevated at 74.51 U/ml and hCG was normal. An urological examination consisted of ultrasound of testes was negative. Immediately, the patient underwent a suboccipital craniotomy with subtotal extirpation of the tumor. One week after the operation, the CT of the

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brain showed an intratumoral hemorrhage without any need of neurosurgical intervention. Pathological findings demonstrated mixed germ cell tumor with dominance of yolk sac tumor, fields of embryocarcinoma, mature and immature teratoma and seminoma. Patient's diplopia and vertical movement of the eyes slightly improved at this stage. However, three weeks later (prior to radiotherapy) patient's neurological symptoms had worsen and hypaesthesia on the left half of the body added up. A magnetic resonance imaging (MRI) of the brain demonstrated a growth of the pineal tumor to previous size. Simultaneously, MRI of C and Th spine, CT of the chest, abdomen and pelvis was performed showing no metastatic dissemination. Level of serum AFP was 419 U/ml and serum hCG was normal. Consecutively, the patient initiated the concomitant radio- and chemotherapy with anti-edema therapy as well. He received radiotherapy to the brain in total dose of 50 Gy and four cycles of chemotherapy BEP (Bleomycin, Etoposide and Cisplatin). He achieved a partial remission, marker negative (MRI of the brain showed the tumor shrank by half, serum AFP was negative). The patient was planned for neurosurgical intervention to extirpate the residual mass. But suddenly, three weeks after the end of chemotherapy, the patient developed paraparesis on lower extremities, progressing to paraplegia, retention of urine, obstipation and hypaesthesia from Th6 in one week. Level of serum AFP was 1406 U/ml, hCG was normal. MRI of Th and L–S spine showed multiple leptomeningeal metastases into the spinal canal from Th6–L3. MRI of the brain was without change. The patient received radiotherapy to the Th6–L3 in total dose of 30 Gy and anti-edema therapy. At the end of the radiotherapy, a new left-side symptomathology was observed. An urgent MRI of C, Th spine showed other leptomeningeal infiltration from C1–Th6. Patient started a concomitant radiotherapy to the C1–Th6 in total dose of 30 Gy and the first cycle of chemotherapy TIP (Paclitaxel, Ifosfamide, Cisplatin). Despite this treatment, patient's clinical status deteriorated rapidly and within one month the patient died.

Conclusion

The extragonadal non-seminomatous germ cell tumor in the pineal region with an aggressive behaviour, refractory to the combined therapy, described in our case report is a rare entity associated with poor prognosis. Adequate diagnostic and therapeutic regimens of these tumors are still under debate. The therapy of recurrent pineal germ cell tumors has to be concomitant radio- and chemotherapy immediately from the diagnosis of the recurrence (5). Thus, further research is needed to achieve better treatment results.

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