Fourth ventricle ependymoma

Fourth ventricle ependymoma is a Posterior fossa ependymoma.

According to Ernestus and Schroder (1993), intracranial ependymomas mainly occur in middle aged and elderly males, and are most common in the fourth ventricle.

Classification

Fourth ventricle ependymoma classification

Clinical features

Intraventricular ependymoma of the fourth ventricle typically produce vague, nonspecific symptoms until they obstruct. Then they cause headache, vomiting, papilloedema and ataxia. Compression of the roof of the fourth ventricle causes nausea. (Gandolfi et al, 1981). According to Ernestus and Schroder, the median symptomatic period is 12 months (1993). As these tumors occur within CSF containing spaces, it seems implausible that they should regularly cause brain symptoms, other than those related to spinal fluid pressure shifts.

Diagnosis

Fourth ventricle ependymoma diagnosis.

Differential diagnosis

Fourth Ventricle Tumor Differential Diagnosis.

Treatment

Fourth ventricle ependymoma treatment

Case reports

A 16-year-old boy presented with a tumor located in the fourth ventricle, which showed histological features of an ependymoma replete with perivascular pseudorosettes and true ependymal rosettes. Interestingly, many of the tumor cells exhibited abundant cytoplasm stuffed with a grayish-brown pigment. Histochemical stains showed the pigment to be acid-fast and periodic acid-Schiff positive

and negative for the Masson-Fontana melanin stain. Additionally, the pigment displayed brilliant autofluorescence under the ultraviolet light of a fluorescent microscope. Ultrastructure examination of the pigment revealed a non-membrane-bound biphasic structure with an electron-dense core and electron-lucent periphery. Only a few similar case reports mention such pigmented ependymomas to contain a mixture of neuromelanin and lipofuscin while others mention it to be melanin itself. Our workup suggests the pigment to represent lipofuscin or its derivative. Generally known to be a pigment of wear and tear, the significance of finding it in a tumor with such abundance remains to be understood and explored [1)].

A case of bilateral hypoglossal palsy with tongue ptosis following surgery of ependymoma in the lower part of the fourth ventricle. Immediate postoperative imaging showed ischemic lesions in both hypoglossal nuclei, not compatible with any known arterial territory. Two etiologies could be identified: a venous medullary infarct of the medulla oblongata or direct injury of both hypoglossal nuclei due to their midline position. Finally, the patient improved progressively and returned to normal.

Intraoperative neurophysiologic monitoring of hypoglossal nerves, in addition to facial nerves, should be performed for tumors in this location [2)].

A 74-year-old woman presented with month-long nausea and vomiting, then she could not take a meal. She had found an asymptomatic 4th ventricular mass 6 years ago as a preoperative work-up for ovarian cancer. And during the yearly follow-up, the mass had grown continuously over 6 years and caused symptoms in the seventh year. MRI revealed a large ovoid extra-axial mass in the fourth ventricle compressing the adjacent medulla and cerebellum. Surgery achieved near total resection since the tumor tightly adhered to the brain stem of the 4th ventricle floor. The histological diagnosis was ependymoma (WHO grade II). She transferred rehabilitation facility for mild gait disturbance, hoarseness, and swallowing difficulty. Fourth ventricle ependymoma in the elderly is extremely rare and the growth rate has not been reported. Here, we present a rare care of 4th ventricle ependymoma found asymptomatic in the elderly but continuously growing to cause local pressure symptoms [3)].

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Power L, Murray K, Drummond KJ, Trost N, Szmulewicz DJ. Fourth ventricle ependymoma mimicking benign paroxysmal positional vertigo. Neurology. 2018 Aug 14;91(7):327-328. doi: 10.1212/WNL.0000000000005992. PMID: 30104227.

A 14-year-old boy had a 12-day history of headache, nausea, and vomiting. Magnetic resonance imaging revealed a tumor in the fourth ventricle. He underwent a posterior median craniotomy, and total removal was achieved. Histologic analysis revealed an anaplastic ependymoma (World Health Organization grade III). Three days after surgery, the patient complained of upper abdominal pain, nausea, and vomiting. Computed tomography of the abdomen showed dilatation of the stomach. Gastroscopy revealed moderate gastritis without gastric outlet obstruction. Nine days after surgery, a jejunal feeding tube (J-tube) was placed for nutritional support. Once the patient improved his oral intake and demonstrated that he could keep up with his nutritional requirements, the J-tube was discontinued 19 days after surgery. The patient had no neurologic or gastrointestinal complaints at the 2-month follow up.

Conclusions: We report, to our knowledge, the first case of gastroparesis following resection of a fourth-ventricle ependymoma in a child. Gastroparesis can recover spontaneously, which we suspect may be due to reversible injury of the dorsal motor nucleus of the vagus [5)].

A 23 year-old female patient underwent radical microsurgical resection of anaplastic ependymoma that originated from the floor of the fourth ventricle. The tumor was growing into the foramen magnum dorsally from the medulla oblongata. Taking into account the age of the patient, the localization of the tumor and the required dose of 60 Gy, proton therapy was chosen due to the lower risk of damage to the brain stem. Radiation therapy was performed using pencil beam scanning and one dorsal field. Following this course of treatment, radiation necrosis of the medulla oblongata and the upper cervical spinal cord occurred with fatal clinical impact on the patient. The article analyses possible causes of this complication and a review of the current literature is given.

Conclusion: Despite the theoretical advantages of proton therapy, no clinical benefit in CNS tumors has yet been proven in comparison with modern methods of photon therapy. Proton therapy is accompanied by many uncertainties which can cause unpredictable complications, such as radiation necrosis at the edges of the target volume. Following proton therapy, there is not only a higher incidence of radiation necrosis but it occurs both sooner and to a higher degree. In cases of high anatomical complexity, the neurosurgeon should cooperate in the creation of the radiation treatment planning to ensure its optimization [6)].

A 38-year-old man had undergone a subtotal resection of the fourth ventricle ependymoma and radiation therapy to the posterior fossa when he was 25 years old. Follow-up MR imaging repeated once every one or two years detected no recurrence until he began to complain of lumbago and numbness of the right foot 13 years after the surgery. MR imaging revealed multiple nodules along the whole spinal cord. Examination of the cerebrospinal fluid detected tumor cells with ependymal cell features. He underwent radiation therapy to the whole spine, and remained stable at 18 months after the therapy. This case alerts us to the necessity for long-term radiological follow-up including the

spinal cord even in benign ependymomas, although it is still not certain for how long and how often we should do it [7].

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