

Intraosseous meningioma

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Abstract: This case report is of an intraosseous meningioma in a 54 year old woman. The role of diagnostic imaging for this pathology as well as causes and patient management are discussed [1-3]

Keywords: Proptosis, optic nerve, exophthalmos.

Case report

A 54 year old woman, who 10 years ago had a 1st to 3rd thoracic vertebrae laminectomy, due to tuberculosis of the spine, presented with a 3 month history of a mass on the right orbit causing proptosis and compression of the optic nerve. The patient had a history of urinary incontinence. She was wheelchair bound. She also suffered from hypothyroidism and for the past 23 years was on treatment of eltroxin.

On clinical examination she had an 11mm pale disc on the right eye, with decreased vision and 3+ relatively afferent pupillary defect and decreased eye movement. She was hypertensive. She was referred for pre and post enhancement computerized tomography scan of the orbits, brain and skull. The findings were marked sclerosis of the right temporo-parietal region, right frontal bone, roof of right orbit, greater wing of right sphenoid bone with extension into the right superior orbital fissure, right optic foramen and impingement on the right lateral rectus. Prominence of the greater wing of the sphenoid bone, causing right proptosis, measuring approximately 8mm of the right orbit, was noted. The optic nerve was stretched and slightly thickened. A soft tissue component, abutting the greater wing of the right sphenoid bone was seen. There was also an apparent decrease in the size of the right temporal lobe. Bony overgrowth/prominence with no midline shift of the brain, hydrocephalus or ring enhancing lesion was found.

Due to the involvement of the optic nerve, sinuses and other structures around the greater wing of sphenoid bone, surgery was not an option. The patient was sent for radiation treatment.

Discussion

Meningiomas may arise from the arachnoid layer adjacent to the major venous sinuses, the most common sites being the parasagittal region, olfactory groove, sphenoidal ridge and suprasellar region. A meningioma may arise as an intradural extramedullary spinal tumour. This tumour is usually benign and slow growing. It is usually well circumscribed and 20% calcify. The tumour may also erode overlying skull bones [1].

This tumour invades the bones of the skull in about 20% of cases leading to perforation of the skull and infiltration into the cranial tissues. The optic pathways can be affected within the orbit by a meningioma arising from the optic nerve sheath or within the skull. The tumors can cause significant optic nerve compression leading to loss of vision (see Figure 1) [1]. Meningiomas do not invade the brain but compress it (Figure 2).

The preferred treatment of meningioma is surgical removal which requires no further treatment [2]. Radiotherapy is used in patients who have undergone partial removal of the tumour or when surgery is contra-indicated. Complete eradication of a meningioma is extremely

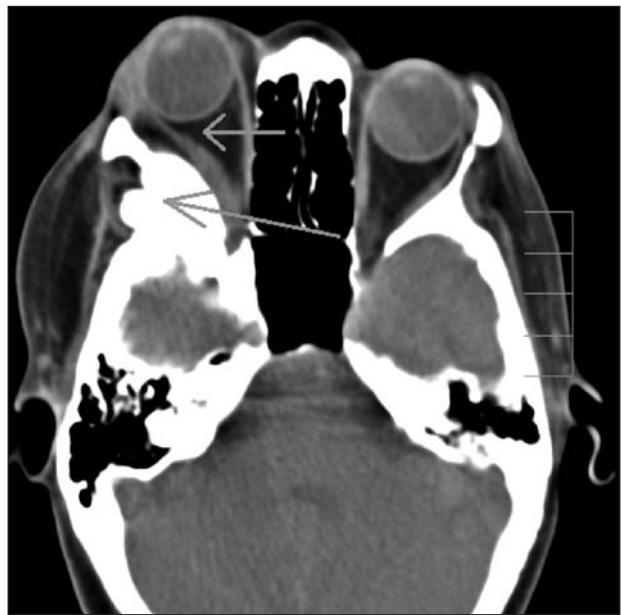


Figure 1. Prominence of greater wing of sphenoid causing right proptosis measuring approximately 8mm of the right globe is seen. The optic nerve is stretched and slightly thickened (small arrow). An appearance of possible soft tissue component, abutting the right greater wing of sphenoid is seen. Also note apparent decrease in size of right temporal lobe.



Figure 2. Axial CT of brain. The arrow indicates a bony overgrowth/prominence with no midline shift of the brain, hydrocephalus or ring enhancing lesion visible.

rare because it is not radiosensitive. Post-surgery radiotherapy reduces the risk of tumour recurrence by about 50% for partially resected meningiomas to 15-20% at 5 years [2].

Viral antigen and DNA have been found in meningiomas by several researchers. It has been hypothesized that infection with the papovavirus may promote growth of meningioma by causing loss of the tumour suppressor gene on chromosome 22. The etiology of viral infections has not been examined epidemiologically [3]. Several authors suggest an association between hormones and the risk of meningiomas because there is an increased incidence in women compared to men. In some of these tumors the presence of estrogen, progesterone, and androgen receptors have been found to be present. However, the exact nature of this relationship and its implication on the management of meningiomas remains under investigation [1].

Patients may present with headache, personality change/confusion, paresis, generalized seizure, visual impairment, focal seizures, ataxia, aphasia, paresthesia, decreased level of consciousness, diplopia, vertigo and decreased hearing. Signs and symptoms depend on location of the tumour [2]. Exophthalmos, monocular loss of vision or blindness, ipsilateral dilated pupils, that do not react to direct light stimulation but might contract on consensual light stimulation, may occur. If the superior

orbital fissure is involved then monocular optic nerve swellings with optociliary shunt vessels, seizures and multiple cranial nerve palsies may also occur [3].

Concluding remarks

Intraosseous meningiomas are benign tumors which are due to meningeal cells entrapment. These tumors are rare and slow growing. Therapy usually consists of resection and cranioplasty and/or radiotherapy. In this patient surgery was not indicated due to the high risks involved. In the case discussed decompression of the optic canal remains feasible to prevent further visual loss.

References

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ARTICLE OF INTEREST

What is constructive dismissal?

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An employer can dismiss an employee for a range of reasons provided correct procedures have been followed. Constructive dismissal is not spelt out in the relevant labor legislation [1]. It is an action taken by an employee when it is no longer possible to continue to work for an employer due to unbearable circumstances [1]. Under such a situation, according to the law, an employer is considered to have dismissed the employee. There are four steps to a constructive dismissal claim instituted by an employee against an employer.

- (i) The employee must have resigned.
- (ii) The employee's resignation must solely be based on intolerable actions/ conduct of the employer.
- (iii) The employer's conduct therefore must have created a situation that was so intolerable that an employee could no longer continue with being employed. The employee must have grounds to objectively show that the employer's conduct was intolerable and that any other employee, placed in that situation, would arrive at the same conclusion. For example, when an employee has exhausted all the options reasonably available then it could be stated in the constructive dismissal claim that the employer's conduct was intolerable as steps were not taken to stop such conduct and the intolerable conduct persisted. The Labor Appeal Court will look at the employer's conduct as a whole and will then decide whether the employee can be expected to put up with it or not [1].
- (iv) If the employer's conduct is proven by the employee to be intolerable then the normal test for dismissal cases applies. The employer must prove
 - that a fair reason existed for the dismissal of the employee: substantive fairness, and
 - that fair procedure is followed when dismissing an employee: procedural fairness.

As constructive dismissal occurs after an employee resigns it is usually inevitable the employer can not provide supporting evidence in terms of procedural fairness. It would thus be unlikely that the employer could show that any procedure had been followed. The employer could attempt to show that his/her conduct was justified hence substantive fairness was operative. However since the employee resigned due to intolerable conduct in the work-place an employer would have to prove fair labor practice was implemented at all times [1].

An employer would possibly be ordered to pay monetary compensation for not following a fair procedure and for not having a fair reason to dismiss the employee if the latter

- (i) can show the employer made his/her continued employment intolerable, and
- (ii) can prove that he/she was constructively dismissed.

Reference

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