Case Report

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Imaging Diagnosis of Retrobulbar Metastasis from Ewing's Sarcoma in Thigh – Unusual Case Report

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Abstract

Orbital tumors are very rare and we reported a case of retrobulbar metastasis from Ewing sarcomain young adult male patient. He presented to National Cancer Institute-Misrata/Libya with metastatic complications of diagnosed Ewing sarcoma in thigh and he was receiving cycles of chemotherapy. During days of admission the patient complained of right vision loss with proptosis. Imaging was underwent for brain and orbits revealing diagnosis ofright retrobulbar metastasis.

Keywords: Imaging; vision loss; metastasis; retrobulbar; Ewing's sarcoma; adult.

Introduction

Ewing's sarcoma is the second malignant bone tumor after osteosarcoma among children and adolescents or in a range between 5 and 25 year old according of the other studies. The commonest location of Ewing's sarcoma is the upper limb, lower limb, pelvis, spine and can affect anyone [1,2,3]. The orbital, conjunctival and lacrimal gland malignant tumors areinfrequent and increasing with increasing age, also they are higher in incidence among males than females [4]. The orbital metastasisis extremely rare [2,5]. Orbital neoplasms areaccounting of only 0.1% of all neoplasms in all the human body. Orbital metastasis is estimated to represent 1-13% of all reported orbital tumors [6,7,8,9]. Breast and prostate cancers are the commonest type to metastasize to the orbit followed by bone and lung among female and male adults, whereas Ewing's sarcoma metastasize to the orbits more frequent among children [5]. The clinical symptoms including vision impairment or loss, exophthalmos, vertigo [10]. We reported an unusualcase of retrobulbar metastasis from Ewing's sarcoma in adult.

Case Presentation

Thirty-first year old male patient presented during admission in National Cancer Institute-Misrata/Libya as a known case of Ewing's sarcoma in the right thigh. Imaging of thigh (**Figure 1,2**) was underwent before admission in our Institute and diagnosed as Ewing's sarcoma in the right thigh proved histopathologically in 2021. He received cycles of chemotherapy with appearance of mass regression. In the last period imaging was underwent for chest, abdomen and pelvis revealing aggression of the sarcomawith distant metastasis to the lungs, bones, spinal vertebrae and cord (**Figure 3,4**) as well as to the liver with mediastinal and abdominopelvic lymphadenopathy.

The patient was admitted in our Institutein Aug. 2022 with presentation of paraplegia, sensation loss of urination and defecation, general weakness as complication of distant metastasis and lastly developed right side vision loss and proptosis.

CT scan of brain and orbits (**Figure 5**) was underwent in the Institute and revealed retro-bulbar soft tissue mass lesion in extraconal compartments of the right orbit and enhanced with contrast media. Nopathological changes in the brain parenchyma, normal posterior fossa and brain stem, normal appearance of ventricular system and no shift of midline structures. MRI of brain and orbits (**Figure 6,7,8**) was underwent also in the Institute revealing right retro-bulbar enhanced mass lesion under the inferior rectus muscle of the eye ball measuring about 2.8 x 1.4 cm. The mass extended through the optic canal and superior orbital fissure, compressing and displacing the distal optic nerve superiorly with proximal encasement of

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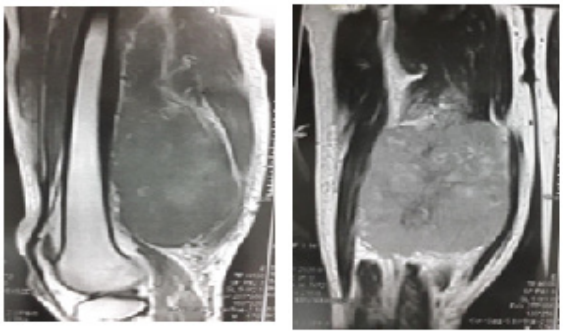
the optic nerve as well as encasing the oculomotor nerve. The imaged retrobulbar mass is one of a distant metastatic lesions from the known Ewing's sarcoma in the thigh which is markedly rare case report. Normal grey-white matter interface with no lesion or any changes in the brain parenchyma, no intra or extracerebral nodules, hemorrhagic changes or any collection. Normal cerebellum, brain stem and cervico-medullary junction. Normal size, shape and position of the ventricular system with no midline shifting or deformity.



A B

Figure 1: *MRI of thigh T1WI (a); soft tissue mass with heterogeneous intermediate low signal intensity, T2WI (b); the mass with heterogeneous high intensity with low signal striation.*

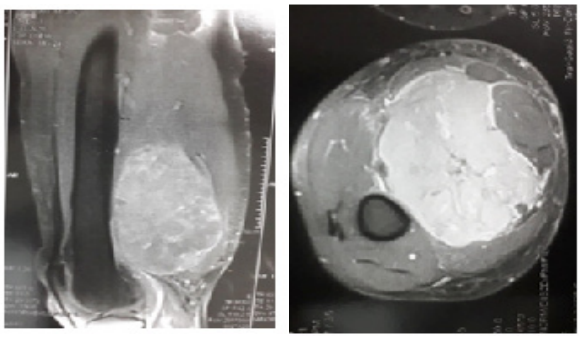


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Figure 2: *MRI of the thigh, T1WI Fat suppression with Gadolinium; heterogeneous and prominent contrast enhancement.*

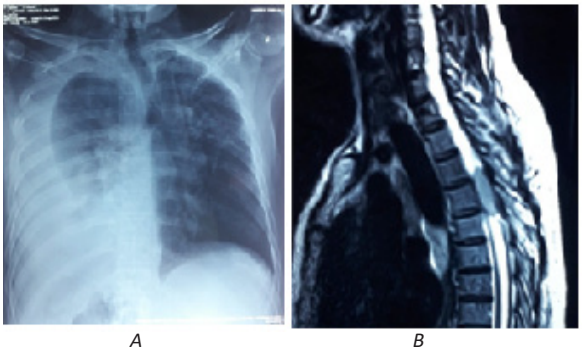

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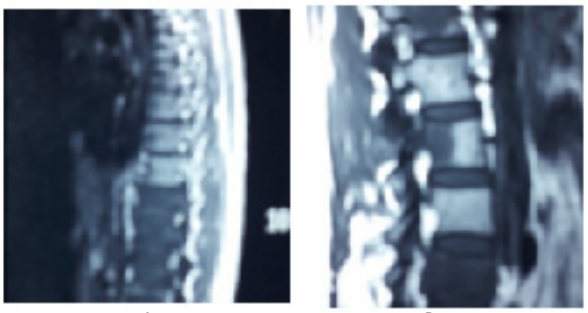
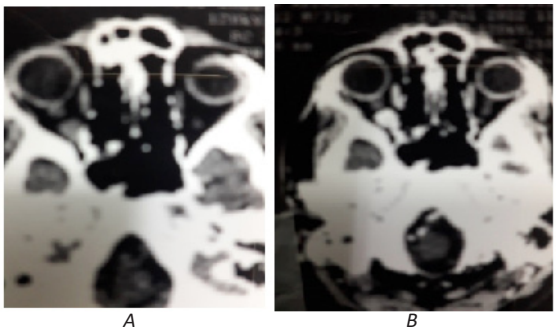
Figure 3: *Chest x-ray (a) revealed nodular pulmonary metastasis with pleural effusion.MRI (b) of upper spine, T2WI; metastatic lesion in spine at D2 level.*



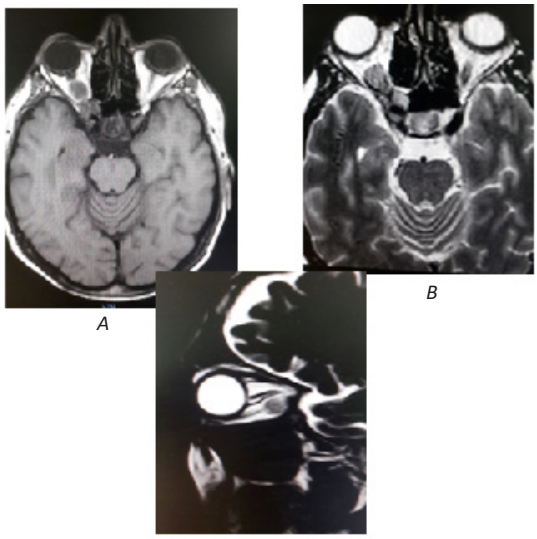
A B

Figure 4: *MRI of dorsal and lumbosacral spine, T2WI; multiple vertebral bodies with low intensity and some of them are expensed (metastasis).*



A B

Figure 5: *CT scan of brain and orbits; retrobulbar small soft tissue mass enhanced with contrast media.*



A B C

Figure 6: *MRI orbits; axial T1WI (a) and T2WI (b) and sagittal T2WI (c) sequences; soft tissue mass in the postero-inferior retrobulbar region.*

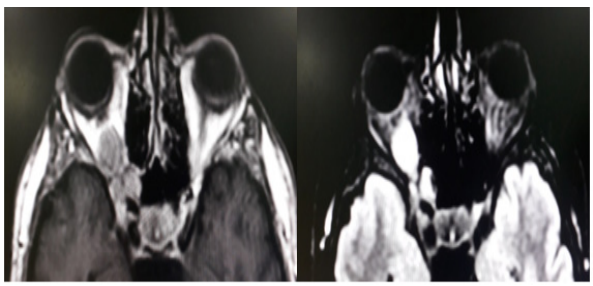


Figure 7: *MRI, T1WI (a) of orbits, T1WI with Gadolinium (b); the soft tissue mass enhanced with contrast.FLAIR; high intensity of the mass.*

Discussion

Many non-reported cases noticed in our practice. Metastasis in the orbit is very rare and accounts 7% (range of 1-13%) of orbital tumors. One of these cases is our case, which already diagnosed in 2021 as Ewing's sarcoma with metastasis using CT scan and MRI for diagnosis with histopathology confirmation.During admission of the patient in National Cancer Institute in Misrata in 2022 was complaining of a blindness beside to general weakness and other symptoms of the metastasis. CT scan and MRI modalities were pioneers and playing the role in the diagnosis of orbital metastasis. CT scan and MRI of brain and orbits revealed no abnormalities in the brain while the right retrobulbar metastatic mass causing displacement of the globe and sudden blindness, without brain involvement. The diagnosis of the case as retrobulbar metastasis from Ewing's sarcoma is in our institute which was extreme rarely reported in literatures.

The orbital metastasis in adult in most cases is from breast cancer, followed by prostate cancer and lung cancer, where as the usual orbital metastasis in children is from neuroblastoma, Ewing's sarcoma and Wilms's tumor. Our case is young adult (he is a 31 year old male patient) with orbital metastasis and the metastasis from Ewing's sarcoma. Retrobulbar metastasis from Ewing's sarcoma is unusual among adults. The tumor in our case was aggressive and metastasized to distant sites includingmetastasis in lungs, brain, spinal vertebrae and spinal cord, chest and liver. The patient is in serious condition and bad prognosis, he is on continuous conservative treatment.

Conclusion

Orbital malignant tumors are rare and metastasis in the orbits is extremely rare. Our case is markedly rare, because it is retrobulbar metastasis from Ewing's sarcoma in young adult CT scan and MRI play main role in the diagnosis of tumor and its metastasis.

Recommendation

The orbital metastasis should be considered in patient with proptosis, periorbital edema, vision disturbance from Ewing's sarcoma, breast cancer, prostate cancer, lung cancer, neuroblastoma or Wilms's tumor.

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