

CASE REPORT

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Solitary plasmacytoma of the cranium: Magnetic resonance imaging findings

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Abstract

Solitary plasmacytoma of cranium is extremely rare. It has a wide pathological spectrum and can be found in benign and malignant (multiple myeloma) forms. Its clinical features are mixed. A comprehensive examination and analysis are required, including radiological examination, immunoglobulin, biochemistry, urine Bence Jones protein test, and bone marrow evaluation for an accurate diagnosis. In this article, magnetic resonance imaging (MRI) findings of a 48-year-old female patient who presented to the clinic with the complaint of swelling in the frontal region and diagnosed as solitary plasmacytoma of cranium as a result of histopathological findings were presented.

Keywords: Plasmacytoma, cranium, magnetic resonance imaging

Introduction

Multiple myelomas (MM) are the most common lymphoproliferative disease that involves the bone marrow and is common in the elderly population. It is rare for patients with multiple myeloma to be younger than 30 years old, and about 2 % of patients are under 40 years of age [1,2]. Extramedullary plasmacytoma is 3 % of all plasma cell neoplasms [3].

A large number of small, individually, sharply limited, lytic lesions or generalized osteoporosis are observed on radiography. Generally, the osteosclerotic reaction is not observed around the lytic areas. Computed Tomography (CT) is a sensitive diagnostic tool for showing bone lesions. It shows lytic lesions, soft tissue component, expansive masses, diffuse osteopenia, bone fractures, and osteosclerosis. Magnetic resonance imaging (MRI) helps CT to show the soft tissue component, staging and to detect the spread of the mass. MRI was superior to CT in examining intracranial soft tissues [4].

In this article, (MRI) findings of a 48-year-old female were presented that diagnosis was a solitary plasmacytoma of the cranium as a result of histopathological findings.

Case Presentation

A 48-year-old female presented to the clinic with a complaint of swelling in the frontal region. Significant neurological dysfunction was not detected clinically. On physical examination, there was soft tissue swelling in the frontal region. Routine laboratory findings were normal. Only mild anemia (hemoglobin 10.8 g / dL; ref 13.8-17.2 g / dL), and hypocalcemia (serum calcium 8.1 mg / dL; ref 8.5-10.5 mg / dL) was seen.

To evaluate the current pathology of the patient, radiologically, I.V. enhanced cranial MRI examination was performed. MRI of the cranium without contrast agent showed a partially lobulated, isointense frontal mass in the T1A sequences (Figure 1). The mass extending to the intradural and extradural area and under the skin, causing destruction in the bone structure, intensely contrasting after the contrast agent in T1A axial and sagittal sequences (Figure 2a, b).

The case was treated surgically; histopathological findings were evaluated compatible with the plasmacytoma of cranium (Figure 3).

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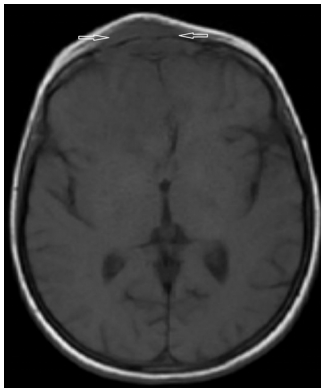


Figure 1. Axial non-enhanced cranial MRI showed a heterogeneously isointense frontal mass in the T1A sequences (arrows)

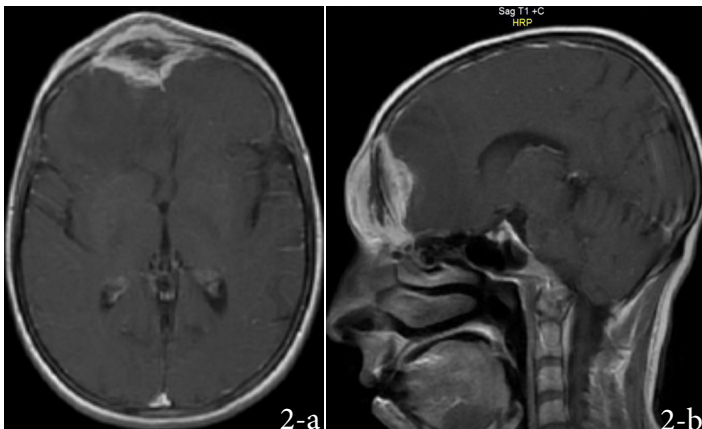


Figure 2 a-b. Brain MRI with I.V. contrast media showing, intense contrast enhancement in the frontal mass. a) axial image, b) sagittal image

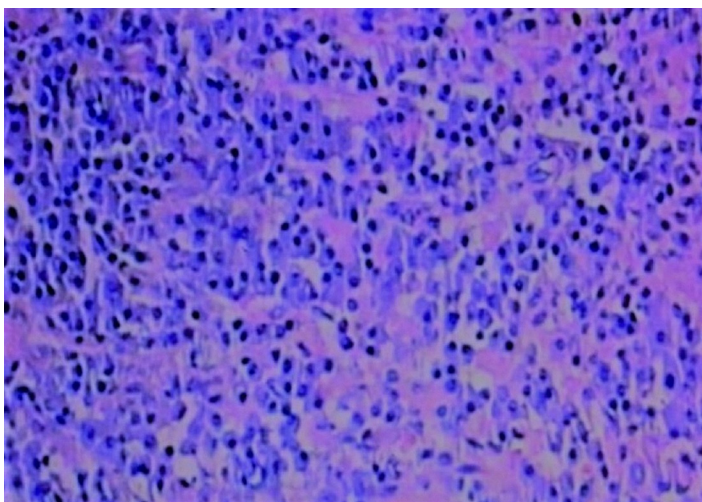


Figure 3. Hematoxylin and Eosin staining × 200 show neoplastic proliferation of differentiated plasma cells of the frontal cranial mass.

Discussion

Multiple myelomas appear between 4 / 100,000 a year. They account for about 1 % of all malignant neoplasms and 15 % of all blood neoplasms [5]. MM is a malignant tumor originating from the bone marrow reticulocytes. Since the tumor cells have an increasing plasmocyte characteristic, the disease is known

as plasma cell myeloma. It is characterized by a decrease in beta lymphocyte count and is mostly seen over the age of 40. The average age of patients is 60 [1,2]. Plasmacytoma, alone or in association with MM, is diagnosed as solitary plasmacytoma when there is evidence of MM in bone marrow aspiration, as well as no other lesions detected in serum and urine protein electrophoresis and complete skeletal research [6].

The most commonly affected bones in MM are the vertebrae, calvarium, pelvis, ribs, scapula, humerus and femur. It can create a bone destruction in any part of the body. The clinical features are complicated and not easily detected, resulting in a high misdiagnosis rate. Its symptoms and signs are not specific, as it does not have neurological symptoms, except in cases such as intraparenchymal spread, compression of the brain and cranial nerves. In this case, the symptoms depend on the localization of the lesion. A comprehensive examination and analysis are necessary for an accurate diagnosis.

CT and especially MRI findings contribute to the correct diagnosis [4,7,8].

Atypical plasma cells in the bone marrow more than 30%; the detection of monoclonal immunoglobulin (M protein) or light chain in urine makes the diagnosis of MM. Differential diagnosis of MM lesions should be made with metastatic carcinoma, lymphoma, and histiocytosis X. Immune electrophoresis, Bence Jones's proteinuria presence in administration contributes to differential diagnosis. Differential diagnosis of dural masses also includes meningeal neoplasms, non-neoplastic meningeal disorders and calvarial neoplasms. Even though the first assumption and most likely diagnosis was meningioma or meningiosarcoma, plasmacytoma must always be included in the differential diagnosis. Bone marrow biopsy is performed for definitive diagnosis. In our case, we were only able to diagnose with bone marrow biopsy.

Total surgical resection following adjuvant radiotherapy is seen as an effective treatment for most skull plasmacytomas. However, there are publications reporting that radiotherapy should be used to prevent tumor recurrence when total resection is achieved. In addition, reports of full recovery after biopsy and radiotherapy are reported because of the plasma cell neoplasms are radiosensitive [9,10].

Conclusion

As a result, plasmacytoma of cranium is a rare clinical condition that requires the cooperation of a neurosurgeon, radiologist, and hematologist. It is of great importance to exclude systematic involvement in the laboratory and radiological imaging. Surgical resection of the disease is the appropriate option. It is necessary to follow together regularly.

Conflict of interests

The authors declare that they have no conflict of interest and any financial disclosures.

Financial Disclosure

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Ethical approval

Ethics committee approval was not received for case report.

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