Study of malignant fibrous histiocytoma: clinical, statistic and histopatological interrelation

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Abstract

Introduction: Malignant fibrous histiocytoma (MFH) is a malignant tumor of soft parts observed at approximately 70% of cases situated at the level of the outsides. Patients and Methods: Our study is formed of 14 cases of patients in a period of three years (2007–2010), diagnosed anatomo-pathological with malignant fibrous histiocytoma at the County Hospital of Oradea. The histopathological examination together with the immunohistochemical one is of vital importance in the establishment of the positive diagnostic and furthermore in the establishment of the differential diagnostic with carcinomas, plasmacytomas, osteosarcomas, fibrosarcomas and lymphosarcomas, fact that arouse the doctors to administrate the correct treatment to a specific patient. Discussion: MFH is a tumor of late adulthood that occurs in men more commonly than women. Computer tomography and MRI have been widely used in the diagnosis and staging of MFH. MFH is secondary to another process such as radiation, surgery, fracture, osteonecrosis, Paget's disease, non-ossifying fibroma or fibrous dysplasia 20% of the time. MFH arising from a previous abnormality is usually more aggressive and has a poorer prognosis than primary MFH. Primary osseous MFH is a central lesion found in the diaphysis or metaphysis of the bone that causes aggressive bone destruction and a soft tissue mass. The most common sites in order are the distal femur, proximal tibia, proximal femur and proximal humerus. Primary osseous MFH is less common. MFH is found in the extremities 70–75% of the time and 50% of all cases are in the lower extremity. Other less common sites include the retroperitoneum, and the head and neck. In our study, of 14 patients with malignant fibrous histiocytoma, the highest incidence is during the sixth decade of life and there is a male to female ratio of 8 to 6. In the specialty literature, malignant fibrous histiocytoma tend to occur in children and teenagers but can also occur in older adults as secondary lesions in bone infarcts and radiation fields. This tumor is clinically similar to osteosarcoma and fibrosarcoma, although malignant fibrous histiocytomas have been classified as different from the osteosarcoma group because of a different histology (no tumor bone production). Treatment is similar to that of osteosarcoma. Conclusions: During our study, the average age was of 61 years in comparison with the specialty literature where the average age was of 50 years. The same as in the specialty literature the cases of fibrous malignant histiocytoma studied are more frequently present at men. Regarding the situation, our study shows the affectation of the long bones especially the femur followed by the radius. The histopathological examination together with the immunohistochemical one is of vital importance in the establishment of the positive diagnostic and furthermore in the establishment of the differential diagnostic with carcinomas, plasmacytomas and lymphosarcomas.

Keywords: malignant fibrous histiocytoma, bone tumors, histiocytes, osteosarcoma, secondary lesions, bone infarcts.

Introduction

Malignant fibrous histiocytoma (MFH) is a pleomorphic high-grade tumor composed of fibroblasts, myofibroblasts, and histiocytes. MFH is the most frequent soft tissue tumor in adults. MFH is found in the lower extremity [1]. MFH is secondary to another process such as radiation, surgery, fracture, osteonecrosis, Paget's disease, non-ossifying fibroma or fibrous dysplasia 20% of the time [1]. MFH arising from a previous abnormality is usually more aggressive and has a poorer prognosis than primary MFH. Primary osseous MFH is a central lesion found in the diaphysis or metaphysis of the bone that causes aggressive bone destruction and a soft tissue mass. The most common sites in order are the distal femur, proximal tibia, proximal femur and proximal humerus. Primary osseous malignant fibrous histiocytoma is less common. MFH is found in the extremities 70–75% of the time and 50% of all cases are in the lower extremity [1]. Other less common sites include the retroperitoneum, and the head and neck [1].
Patients, Methods and Results

We achieved a descriptive study on a period of three years (2007–2010) following up the cases of malignant fibrous histiocytoma diagnosed in the Pathology Anatomy laboratory of the Oradea County Hospital. In the study were included cases of malignant fibrous histiocytoma confirmed histological.

As in the specialty literature, as well in our cases the location was the same. In this study in particular, the location was dominant at the long bone.

In our study, of 14 patients with malignant fibrous histiocytoma the highest incidence is during the sixth decade of life and there is a male to female ratio of 8 to 6. From the total of 14 patients with MFH, eight cases is male patients and the rest of six cases is female patients (Tables 1 and 2).

Table 1 – Repartition of patients taken in study, by gender

<table>
<thead>
<tr>
<th>Patients’ gender</th>
<th>No. of cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>8</td>
<td>57.14</td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>42.85</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2 – Medium age of patients by gender, taken in study

<table>
<thead>
<tr>
<th>Patients’ gender</th>
<th>Medium age [years] and standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>60.8 ± 18.96</td>
</tr>
<tr>
<td>Female</td>
<td>61.3 ± 15.31</td>
</tr>
<tr>
<td>Total</td>
<td>61.0 ± 16.85</td>
</tr>
</tbody>
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Symptoms and presentation

Clinically, MFH presents with local pain and swelling. There is often a history of a rapidly enlarging mass. Pathologic fractures are present 20% of the time. Radiologically, MFH is an aggressive, permissive lesion, which often lacks distinctive features found in other high-grade primary bone malignancies. It usually presents with a soft tissue mass with or without cortical erosion. There is not normally a periosteal reaction [2, 3].

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Calcifications may be seen with or without cortical erosion [1, 4 – 7].

Histopathology findings

On gross examination, MFH is a lobulated, fleshy, gray white mass. There may be yellow areas of lipid or darker areas of hemorrhage. The mass may be all soft tissue or have intra-osseous extension. The margins of the tumor are normally ill defined and destructive.

Under the microscope, there are five sub-types of MFH: storiform-pleomorphic, myxoid, giant cell, inflammatory and angiomatoid. In all forms, there are fibroblast and histiocyte elements in some ratio. The storiform-pleomorphic form accounts for 50–60% of all MFH and is normally found in large muscle groups of the extremity. Plump spindle cells are found in a matted pattern in fascicles. A pinwheel pattern is found especially around vessels. The myxoid form is hypocellular and has a large mucoid component. The giant cell form has necrosis and hemorrhage in addition to giant cells. The inflammatory form has many inflammatory cells including xanthomas and is often found in the retroperitoneum. The angiomatoid form is often found in the subcutaneous tissues. MFH extends along fascial planes. Calcifications are formed by reactive peristeal cells and are not produced by tumor cells, which helps to differentiate the tumor from fibrosarcoma (Figures 1 and 2) [8, 13].

The cell of origin is still a matter of debate between a histiocyte and a mesenchymal cell. The tumor stains positive for histocytic markers CD68 and lysosome. Like other sarcomas, MFH is graded from 1 to 4 with a higher grade having a worse prognosis. Other tumors that must be excluded include myosarcoma and liposarcoma. MFH was introduced as a diagnosis in 1963 and prior to that time, tumors of this type were classified as rhabdomyosarcoma or fibrosarcoma. Some pathologists believe that many of the tumors now classified as MFH should be reclassified with a more specific diagnosis such as synovial cell sarcoma or leiomyosarcoma, based on careful study of cellular markers [1, 8].

Differential diagnosis

The radiologic and histological differential includes metastatic cancer, plasmacytoma, lymphoma, osteosarcoma, and fibrosarcoma [13, 14].

This tumor is clinically similar to osteosarcoma and fibrosarcoma, although malignant fibrous histiocytomas have been classified as different from the osteosarcoma group because of a different histology (no tumor bone production) [13, 14].

Treatment options for this tumor

Treatment of MFH depends on grade, stage and site. Patients may benefit from pre-operative chemotherapy before surgery. Chemotherapy may reduce the tumor bulk and increases the chances of a limb sparing procedure. Selective trans-catheter intra-arterial chemotherapy has been employed to reduce systemic toxicity. Local recurrences are common [13, 15]. Treatment is similar to that of osteosarcoma [13, 14].

The prognosis of MFH becomes worse as a lesion is larger and deeper in the soft tissue. MFH metastasize to the lungs, lymph nodes, liver and bone (Figures 3–5) [16, 17].
Malignant fibrous histiocytoma is a tumor of late adulthood that occurs in men more commonly than women. Computed tomography (CT) and MRI have been widely used in the diagnosis and staging of MFH [1, 4, 18–28].

In our study, of 14 patients with malignant fibrous histiocytoma, the highest incidence is during the sixth decade of life and there is a male to female ratio of 8 to 6. In the specialty literature, malignant fibrous histiocytoma tend to occur in children and teenagers but can also occur in older adults as secondary lesions in bone infarcts and radiation fields. During our study, the average age was of 61 years in comparison with the specialty literature where the average age was of 50 years. Regarding the situation, our study shows the affectionation of the long bones especially the femur followed by the radius.

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Conclusions

During our study, the average age was of 61 years in comparison with the specialty literature where the average age was of 50 years. The same as in the specialty literature the cases of fibrous malignant histiocytoma studied are more frequently present at men. Regarding the situation, our study shows the affection of the long bones especially the femur followed by the radius. The histopathological examination together with the immunohistochemical one is of vital importance in the establishment of the positive diagnostic and furthermore in the establishment of the differential diagnostic with carcinomas, plasmacytomas and lymphosarcomas. The prognosis of MFH becomes worse as a lesion is larger and deeper in the soft tissue. MFH metastasize to the lungs, lymph nodes, liver and bone. Local recurrences are common.

References


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