ORIGINAL ARTICLE

SPECTRUM OF LIPOSARCOMAS–A STUDY OF 106 CASES

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Background: Liposarcoma is a malignant tumour that arises in fat cells in deep soft tissue. This study was conducted to access the spectrum of liposarcomas **Methods:** This descriptive study was conducted at Armed Forces Institute of Pathology (AFIP), Rawalpindi from 1st January 2008 to 31st December, 2012 and included all the cases diagnosed as liposarcomas. Records of the malignant tumors of soft tissue that presented during this period were analysed and out of this spectrum of liposarcomas were studied. **Results:** A total of 19367 malignant tumours were diagnosed during study period. Out of these, 615 were malignant soft tissue tumours. Out of these 106 cases were liposarcoma with an overall frequency of 0.54% of the malignant neoplasm and 17.24% of soft tissue sarcomas .The age ranged from 26–85 years. Out of these 106 cases 77 were male and 29 were female with a male to female ratio of 2.6:1. The most common tumour seen was pleomorphic liposarcoma (42.5%) followed by myxoid liposarcoma (22.6%), dedifferentiated liposarcoma (19.8%) and well differentiated liposarcoma (15.1%). Fifty five (51.9%) of liposarcomas originated in lower extremity, the second most commonly involved site was upper extremity (22.6%) **Conclusion:** Pleomorphic Liposarcoma is the commonest liposarcoma of extremities and their frequency is much high in our population.

Keywords: Malignant, Soft tissue sarcoma, Liposarcoma

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INTRODUCTION

Liposarcoma is a malignant mesenchymal tumour usually occurring in the inter-muscular fascia in the upper thigh, characterized by primitive lipoblastic cells with varying degrees of lipoblastic or lipomatous differentiation, sometimes with foci of normal fat cells.[1] Liposarcoma arises in fat cells in deep soft tissue, such as those inside the thigh or in the retroperitoneum. They are typically large bulky tumours which tend to have multiple smaller satellites extending beyond the main confines of the tumour.

Liposarcoma account for less than 20% of all adult soft tissue sarcomas and commonly appears in fifth to seventh decade of life.[2] Myxoid liposarcoma is the well differentiated and second commonest liposarcoma worldwide. The 5 years survival rate of 23–58% is strongly associated with grade of tumour.[3]

Based on histological features, liposarcomas have been divided into four subtypes, well-differentiated liposarcoma, Myxoid liposarcoma, de-differentiated liposarcoma and Pleomorphic liposarcoma.[4] It predominantly involves the deep soft tissues of the extremities, and more than two-thirds of cases arise within the musculature of the thigh.[5] The objective of the study was to analyse the spectrum of liposarcoma including frequency, age, gender distribution, site of origin and histo-pathological pattern of liposarcoma, diagnosed at Armed Forces Institute of Pathology (AFIP), Rawalpindi, Pakistan.

MATERIAL AND METHODS

In this cross-sectional descriptive study records of all the malignant tumours diagnosed at AFIP, Rawalpindi Pakistan from 1st January 2008 to 31st December 2012 were analysed. The institute receives biopsy from Armed forces, public and private sector hospitals in Northern Pakistan. The biopsies were received in 10% formalin and were processed in automatic tissue processor Tissue Tek VIP™, 3–5 micron sections were prepared and immune-histo-chemical panel of vimentin, S 100, and leptin were applied for confirmation of the diagnosis. Out of these records, the malignant tumour of soft tissue was retrieved and then the record of liposarcomas from this data was extracted. The age, gender of patient and anatomic location of tumour was noted. The tumours were classified according to WHO classification of soft tissue tumour. Data was analysed using SPSS-19. Descriptive statistics were such as mean and standard deviation (SD) were used for quantitative variables while frequency and percentages for qualitative variables.

RESULTS

A total of 19367 malignant tumours were diagnosed at AFIP, Rawalpindi during the study period. Out of these, 615 were found to be malignant soft tissue tumour. Out of these 106 cases were liposarcoma. Overall frequency of malignant soft tissue tumours was found out to be 3.17% while liposarcomas constituted 17.24% of soft tissue sarcomas.

The age range of the patients of liposarcomas was from 26–85 years. Age statistics were analysed for different age groups and the result showed that the tumour occurred predominantly in fifth to seventh decade (Table-1). Out of 106 cases of liposarcomas 77 were male and 29 were female with a male to female ratio 2.6:1.

Regarding site of malignancy, it was observed that 55(51.9%) of the tumours originated in lower extremity and the second most commonly involved site was upper extremity 24, followed by abdomen 11, back 4, retro-peritoneum and chest wall 2 each as shown in table-2.

The most common histological tumour type seen was pleomorphic liposarcoma n=45 (42.5%), the most common involved site was lower extremity (20) {thigh 11, buttock 5, leg 4} followed by upper extremity (10) {Arm 6, Hand 4}, chest wall 2), axilla (2), Back (2), scalp (1) Neck (1), lumbar region (1) and site not otherwise specified (5). The age ranged from 25–90 years and the most commonly affected age group was from 40–70 years. The second most common type was myxoid liposarcoma n=24 (22.6%), the most common site of involvement was lower extremity (8) {Thigh 4, Buttocks 4} followed by upper extremity (4) {Arm 2, Forearm 2}, chest wall (3), abdominal wall (3), abdominal cavity (1), Neck (1) and Not otherwise specified (4). The age ranged from 25–80 years and the most common age group affected was from 40–60 years. The third common liposarcoma was dedifferentiated liposarcoma n=21 (19.8%), the common site of involvement was lower extremity (6) {thigh 2, buttock 2, leg 2} followed by upper extremity (4) {Arm 4}, Chest wall (3), Abdominal cavity (1), Abdominal wall (1), Neck (1) and Not otherwise (5). The age group involved was from 30–90 years. The least common liposarcoma was well differentiated liposarcoma n=16 (15.1%), the most common site of involvement was lower extremity (8) {Thigh 4, Leg 4} followed by upper extremity (5) {Arm5}, Abdominal cavity (1) and Not otherwise specified (2). The age group involved was 40–70 years. The frequency of various histological subtypes of liposarcomas is shown in table-3.

Table-1: Frequency of Liposarcomas in different age groups

Age Groups	Frequency	Percentage
26–30 years	3	2.8
31–40 years	9	8.5
41–50 years	27	25.5
51–60 years	27	25.5
61–70 years	26	24.5
71–80 years	12	11.3
81 to 90 years	2	1.9
Total	106	100.0

Table-2: Frequency of site involvement

Site of Tumour	Frequency	Percentage
Abdomen	11	10.3
Back	4	3.8
Breast	1	0.9
Chest wall	2	1.9
Head and Neck	2	1.9
Lower Extremities	55	51.9
Not otherwise specified	5	4.7
Retroperitoneum	2	1.9
Upper Extremities	24	22.7
Total	106	100.0

Table-3 Histo-pathological pattern of subtypes of liposarcomas

Subtypes of liposarcoma	Frequency	Percentage
Dedifferentiated liposarcoma	21	19.8
Myxoid liposarcoma	24	22.6
Pleomorphic liposarcoma	45	42.5
Well differentiated liposarcoma	16	15.1
Total	106	100.0

DISCUSSION

Liposarcoma account for less than 20% of all adult soft tissue sarcoma. An estimated 13,000 people were diagnosed with soft tissue and bone sarcoma in 2009 in America, of which liposarcomas constituted 20%.[5] Despite their rarity these tumours have substantial morbidity and mortality, depending on histological subtype, tumour location, and volume with retroperitoneal sarcomas having particularly poor prognosis. Myxoid liposarcoma occurs with predilection in the deep soft tissues of the extremities, and in more than two-thirds of cases arises within the musculature of the thigh. It rarely arises primarily in the retro-peritoneum or in subcutaneous tissue.[4]

We diagnosed 106 cases of liposarcomas at AFIP during the last five years (2008–2012). In our setup, Pleomorphic liposarcoma is the commonest liposarcoma while the commonest liposarcoma worldwide is well differentiated liposarcoma. Since well differentiated liposarcoma/atypical lipomatous tumour usually occur in extremities which may be taken as lipoma. As significant number of these cases is not subjected to histo-pathological examination, they are likely to be missed and under reported. This might be the cause in our case. The second and third commonest liposarcomas are myxoid liposarcoma and dedifferentiated liposarcoma which was also reported by international studies at United States and South Korea.[5] The most common type of liposarcoma in our setup is pleomorphic liposarcoma followed by myxoid liposarcoma, dedifferentiated liposarcoma and the least common liposarcoma is well differentiated liposarcoma.

Liposarcoma most commonly arises in thigh and retroperitoneum.[6] Extremities are most commonly affected in pleomorphic liposarcoma[7] which was also seen in our study. Thigh is the most common commonly affected site in Myxoid liposarcoma which was also

seen in our study. Retroperitoneum and spermatic cord are the commonly affected sites in dedifferentiated and well differentiated liposarcoma but in our study extremities are the commonly affected. The commonest liposarcoma worldwide is well differentiated liposarcoma which was also reported by studies at South Korea and United States.[5,6]

CONCLUSION

We found out that pleomorphic liposarcoma is the commonest liposarcoma followed by myxoid liposarcoma, dedifferentiated liposarcoma and well differentiated liposarcoma.

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