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# SPECTRUM OF SOFT TISSUE TUMOUR WITH DIAGNOSTIC UTILITY OF HISTOPATHOLOGY AND IMMUNOHISTOCHEMISTRY

Pathology

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## ABSTRACT

**Background:** Mesenchymal proliferations in the extra-skeletal, non-epithelial tissues of the body—aside from the lymphoreticular system, brain coverings, and viscera are referred to as soft tissue tumours. Any age and all site can have soft tissue tumours. Soft tissue tumours histopathology with overlapping patterns, diagnosed by using immunohistochemistry. Approach for diagnosis of soft tissue tumours include first ruling out non mesenchymal tumour and then established the mesenchymal lineage using panel of primary antibodies of different mesenchymal cell lineage. Mesenchymal cell lineage include adipocytic, fibroblastic/myofibroblastic, vascular, pericytic, smooth muscle, GIST, nerve sheath, undifferentiated type of tumours. Some tumours requiring specific primary antibodies.

**Aims And Objectives**

1.To determine the histopathological spectrum of soft tissue tumours by evaluation of specimen.
2.To study the incidence of various soft tissue tumours with respect of age, sex and site.
3.Use immunohistochemistry to support histopathological diagnosis and for conclusive diagnosis where it is needed.

**Material And Methods:** Formalin-fixed, paraffin embedded sections were prepared and histopathological examination was done. Immunohistochemistry is performed. **Results:** A comprehensive analysis of 300 cases of soft tissue over 2 year period is done out of which 274 are benign, 11 cases of intermediate and 15 cases of malignant soft tissue tumours. Immunohistochemistry is performed in 50 cases. **Conclusion:** Most common benign soft tissue tumour in above study is lipoma, intermediate tumour is angiomyolipoma and malignant tumour is malignant peripheral nerve sheath tumour (MPNST). Soft tissue tumours are having overlapping histopathological features so many time it is not possible to conclude precisely by only histopathological diagnosis, so immunohistochemistry is must to reach to the perfect diagnosis.

## KEYWORDS

Soft tissue tumour, Histopathology, Immunohistochemistry

## INTRODUCTION:

Mesenchymal proliferations in the extra-skeletal, non-epithelial tissues of the body—aside from the lymphoreticular system, brain coverings and viscera are referred to as soft tissue tumours.[1] Any age can have soft tissue tumours. It has been shown that the histologic distribution of soft tissue tumour is unique to anatomical site and age group. They appear almost everywhere in the body, with the limbs, trunk, abdominal cavity, and head and neck area being the most significant places.[2] Soft tissue tumours still have an unclear etiology and majority of them arises sporadic. Recognized causes include various chemical and physical factors, exposure to ionizing radiations and inherited or acquired immunologic defects.[3][4][5] Soft tissue tumours with overlapping histological patterns, diagnosed by using immunohistochemistry. Approach for diagnosis of soft tissue tumours include first ruling out non mesenchymal tumour and then established the mesenchymal lineage using panel of primary antibodies of different mesenchymal cell lineage.[6] Mesenchymal cell lineage include adipocytic, fibroblastic/myofibroblastic, vascular, pericytic, smooth muscle, GIST, nerve sheath, undifferentiated type of tumours.[7] Some tumours requiring specific primary antibodies.

**Type Of Study:** Prospective Study

## AIMS AND OBJECTIVES

1.To determine the histopathological spectrum of soft tissue tumours by evaluation of specimen.
2.To study the incidence of various soft tissue tumours with respect of age, sex and site.
3.Use immunohistochemistry to support histopathological diagnosis and for conclusive diagnosis where it is needed.

## MATERIALS AND METHODS

**Place Of Study:** At the department of pathology, in Histopathology and IHC section of Shri M.P. Shah Government Medical College, Jamnagar.

**Design Of Study:** A diagnostic prospective study.

**Duration Of Study:** 2 Years (May 2022 to April 2024).

**Sample Size:** 300 cases

**Sample Types:** Soft tissue specimens received in histopathology section of the pathology department.

Clinical work up, radiological investigations and detailed history of present complaint and local examination are taken from requisition forms in histopathology section.

**Inclusion Criteria:**

- All age groups
- Both sexes
- Radiological investigation suggestive of soft tissue tumour.

**Exclusion Criteria:**

- If radiological investigation suggestive of infective etiology.

**For Resected Specimen And Biopsy:**

For histopathological analysis, the specimen's representative sections or in the case of biopsies, the entire specimen was submitted. Blocks of tumour tissue of 2cm x 2cm x 0.5cm were gathered, fixed for a 24 hours period in a 10% neutral buffered formalin solution and then processed histologically and paraffin embedded with 3-4um thick histological paraffin slices were cut. Light microscopy was used to assess the H&E staining. Morphology was used to make the diagnosis.

**IHC Panel:**

IHC using relevant antibodies is done according to histomorphological features wherever needed. Immunohistochemical studies are carried out with 3-4um thick sections . The antibodies included are Vimentin, Desmin, Pan CK, WT1 SMA, Caldesmon, S100, EMA, MDM 2, CDK4,CD 34, DOG 1, CD 117, ALK 1.

The sections are taken on poly L lysine coated glass slides. The secondary antibody kit of Dygnova is used for the study. The primary monoclonal ready to use antibodies are of DAKO, Thermofischer, Biogenex , Diagnostic Biosystems and Biocare Medical company. Tris-EDTA solution of high pH (8.4) is used for the antigen retrieval,

i.e Heat Induced Epitope Retrieval (HIER), in pressure cooker for up to one whistle. Thereafter the slides are brought down to room temperature and taken through the steps of the immunostaining protocol using Tris buffered saline as the wash buffer. The peroxide block is freshly prepared for each use. The sections are covered with one to two drops of the primary antibody for incubation for 30 minutes to 2 hours according to company manual in humid chamber. The slides are thoroughly washed with tris buffered saline in between each step. After this the polymer HRP provided in the kit will be used. Finally DAB chromogen is used in the specific concentration as specified by the company. The slides are counter stained by haematoxylin and the mounted by DPX. After drying the test slides are examined under the light microscopy simultaneously with the positive control slides. Negative external control slides are treated similarly. The positive control section for respective IHC marker are selected appropriately.

## OBSERVATION AND RESULTS

In the present study, total 300 specimens are received in the histopathology laboratory of pathology department, during the period of about 2 years .

**Table 1: Relative Incidence Of Benign, Intermediate And Malignant Soft Tissue Tumours (n=300)**

| Type | No. of soft tissue tumours | Percentage (%) |
|---|---|---|
| Benign | 274 | 91.33% |
| Intermediate | 11 | 03.67% |
| Malignant | 15 | 5% |

Out of 300 cases of soft tissue tumours, 274 cases (91.33%) are benign, 11 cases (3.67%) are of intermediate and 15 cases (5%) are of malignant category.

**Table 2: Age Wise Distribution Of Soft Tissue Tumours (n=300)**

| Age groups (years) | Benign | Intermediate | Malignant | Total |
|---|---|---|---|---|
| 0-10 | 12 | 00 | 00 | 12 |
| 11-20 | 30 | 02 | 01 | 33 |
| 21-30 | 46 | **04** | 01 | 51 |
| 31-40 | **58** | 02 | 03 | 63 |
| 41-50 | **58** | 03 | **05** | **66** |
| 51-60 | 40 | 00 | 02 | 42 |
| 61-70 | 21 | 00 | 02 | 23 |
| >70 | 09 | 00 | 01 | 10 |
| Total | 274 | 11 | 15 | 300 |

The majority of soft tissue tumours present in 5th decade of life. The most common age of presentation for benign tumours is 4th and 5th decade, for intermediate 3rd decade and for malignant soft tissue tumours 5th decade.

**Table 3: Gender Wise Distribution Of Soft Tissue Tumours (n=300)**

| Category | Gender | | Total |
|---|---|---|---|
| | Male | Female | |
| Benign | **149** | 125 | 274 |
| Intermediate | 04 | **07** | 11 |
| Malignant | 07 | **08** | 15 |
| Total | 160 | 140 | 300 |

Incidence of Benign soft tissue tumours are more in male while intermediate and malignant soft tissue tumours are more in female.

**Table 4: Histological Types Of Soft Tissue Tumours (n=300)**

| Categories | Types | No. of cases | Percentages (%) |
|---|---|---|---|
| Adipocytic Tumours | **Lipoma** | **161** | **53.67%** |
| | Spindle cell lipoma | 01 | 0.33% |
| | Myolipoma | 01 | 0.33% |
| | Angiolipoma | 01 | 0.33% |
| | Liposarcoma, well-differentiated, NOS | 02 | 0.67% |
| | Dedifferentiated Liposarcoma | 01 | 0.33% |
| Fibroblastic/ Myofibroblastic Tumours | **Fibroma** | **09** | **3%** |
| | Calcifying aponeurotic fibroma | 01 | 0.33% |
| | Angiofibroma | 02 | 0.67% |
| | Proliferative Myositis | 02 | 0.67% |
| | Fibromatosis | 02 | 0.67% |
| | Desmoid type fibromatosis | 01 | 0.33% |
| | DFSP | 02 | 0.67% |
| | IMFT | 02 | 0.67% |
| | Myxofibro Sarcoma | 02 | 0.67% |
| So-called fibrohistiocytic tumour | Tenosynovial giant cell tumour | 02 | 0.67% |
| Vascular Tumours | **Hemangioma** | **22** | **7.33%** |
| | Lymphangioma | 04 | 1.33% |
| Pericytic Tumour | Glomus tumour | 01 | 0.33% |
| Smooth Muscle Tumours | **Leiomyoma** | **37** | **12.33%** |
| | Leiomyosarcoma | 03 | 1% |
| GIST | | 05 | 1.67% |
| Nerve Sheath Tumours | **Schwannoma** | **17** | **5.66%** |
| | Neurofibroma | 05 | 1.67% |
| | MPNST | 05 | 1.67% |
| Tumours of Uncertain Differentiation | **Myxoma** | **03** | **1%** |
| | Angiomatoid Fibrous Histiocytoma | 01 | 0.33% |
| | **Angiomyolipoma** | **03** | **1%** |
| | Desmoplastic small round cell tumour | 01 | 0.33% |
| | Undifferentiated Sarcoma | 01 | 0.33% |

The most common soft tissue tumour is lipoma (161 cases) followed by leiomyoma (37 cases), hemangioma (22 cases) and schwannoma (17 cases).

**Table 5: Table 6: Site wise distribution of soft tissue tumours (n= 300)**

| Site | No. of Lesions |
|---|---|
| **Head and neck** | 69 |
| **Perineum** | 14 |
| **Extremities and Chest** | **134** |
| **Back** | 36 |
| **Abdomen** | 37 |
| **Retroperitoneum** | 10 |

The most common site for soft tissue tumour is Extremities and Chest (134) follow by Head and Neck (69) region.

**Table 6: Site Wise Distribution Of Adipocytic Tumours (n= 167)**

| Types | No. of cases | Common Site |
|---|---|---|
| **Lipoma (Conventional)** | **161** | **Extremities & Back** |
| Spindle cell lipoma | 01 | Abdomen (wall) |
| Myolipoma | 01 | Retroperitoneum |
| Angiolipoma | 01 | Upper Extremities (Arm) |
| Liposarcoma, well-differentiated, NOS | 02 | Lower Extremities (Thigh) & Retroperitoneum |
| Dedifferentiated liposarcoma | 01 | Retroperitoneum |

In the present study, lipoma (161 cases) is the common benign adipocytic Soft tissue tumours, most common site is Extremities and back.

**Table 7: Site Wise Distribution Of Fibroblastic/ Myofibroblastic Tumours (n=23)**

| Types | No. of cases | Common Site |
|---|---|---|
| **Fibroma** | **09** | Extremities |
| Calcifying aponeurotic fibroma | 01 | Lower Extremities (Toe) |
| Angiofibroma | 02 | Head & neck (Nasal cavity) |
| Proliferative Myositis | 02 | Upper Extremities(Arm) |
| Fibromatosis | 02 | Upper Extremities(Hand) |
| Desmoid type fibromatosis | 01 | Abdomen (wall) |
| DFSP | 02 | Lower Extremities (Thigh) |
| IMFT | 02 | Lower Extremities & Abdomen |
| Myxofibro Sarcoma | 02 | Lower Extremities (Thigh) |

In the present study, common benign fibroblastic/myofibroblastic soft tissue tumour is fibroma (9 cases) and most common site is Extremities. The most common intermediate fibroblastic/ myofibroblastic soft tissue tumours are DFSP (2 cases) at Lower Extremities (thigh) and IMFT (2 cases) at Lower Extremities &

Abdomen. The most common malignant soft tissue tumour is Myxofibro Sarcoma at Lower Extremities (Thigh).

**Table 8: Site Wise Distribution Of So-called Fibrohistiocytic Tumour (n=2)**

| Types | No. of cases | Common Site |
|---|---|---|
| Tenosynovial giant cell tumour | 02 | Upper Extremities (Wrist) |

In the present study, Two case of Benign So-called fibrohistiocytic tumour - Tenosynovial giant cell tumour at upper Extremities (wrist).

**Table 9: Site Wise Distribution Of Vascular Tumours (n=26)**

| Types | No. of cases | Common Site |
|---|---|---|
| Hemangioma | 22 | Head & Neck |
| Lymphangioma | 04 | Head & Neck |

In the present study, common vascular tumour is hemangioma (22 cases), most common site is Head & Neck region.

**Table 10: Site Wise Distribution Of Pericytic Tumour (n=1)**

| Types | No. of cases | Common Site |
|---|---|---|
| Glomus tumour | 01 | Head & Neck |

In the present study, one case of Benign pericytic tumour- Glomus tumour at Head & neck region found.

**Table 11: Site Wise Distribution Of Smooth Muscle Tumours (n=40)**

| Types | No. of cases | Common Site |
|---|---|---|
| **Leiomyoma** | **37** | **Abdomen (Pelvic cavity)** |
| Leiomyosarcoma | 03 | Abdomen (Pelvic cavity) |

In the present study, most common site is uterus.

**Table 12: Site Wise Distribution Of GIST (n=5)**

| Types | No. of cases | Common Site |
|---|---|---|
| GIST | 05 | Abdomen (Small Intestine) |

In the present study, five case of GIST and common site is Abdomen (Small Intestine).

**Table 13: Site Wise Distribution Of Nerve Sheath Tumours (n=27)**

| Types | No. of cases | Common Site |
|---|---|---|
| **Schwannoma** | **17** | **Head & Neck** |
| Neurofibroma | 05 | Head & Neck |
| MPNST | 05 | Head & Neck , Retroperitoneum & Abdomen |

In the present study, most common benign nerve sheath tumour is schwannoma (17 cases) followed by neurofibroma (5 cases), most common site is Head & Neck region and malignant nerve sheath tumour is MPNST (5 cases), present at Head & Neck, Retroperitoneum and Abdomen.

**Table 14: Site wise distribution of Tumours of Uncertain Differentiation (n=9)**

| Types | No. of cases | Common Site |
|---|---|---|
| Myxoma | 03 | Extremities |
| Angiomatoid Fibrous Histiocytoma | 01 | Head & neck |
| **Angiomyolipoma** | **03** | **Retroperitoneum (Kidney)** |
| Desmoplastic small round cell tumour | 01 | Abdomen |
| Undifferentiated Sarcoma | 01 | Extremities |

In the present study, most common benign soft tissue tumour of Uncertain differentiation is Myxoma , at Extremities , intermediate soft tissue tumour is Angiomyolipoma (3cases) of kidney and malignant soft tissue tumour of Uncertain Differentiation are desmoplastic small round cell tumour at gastrointestinal tract and Undifferentiated Sarcoma at Extremities.

**Table 15: Diagnosis And IHC Markers Study (n=50)**

| Categories | Diagnosis | No. of cases | Positive IHC markers |
|---|---|---|---|
| Adipocytic Tumours | Spindle cell lipoma | 01 | Vimentin, S100, Desmin, CD 34 |
| | Myolipoma | 01 | Vimentin, SMA, S100 |
| | Liposarcoma, well-differentiated, NOS | 02 | S100, MDM2, CDK4 |
| | Dedifferentiated liposarcoma | 01 | Vimentin, SMA, MDM2, CDK4 |
| Fibroblastic/ Myofibroblastic Tumours | Desmoid type fibromatosis | 01 | Vimentin, Desmin , SMA |
| | DFSP | 02 | CD34 |
| | IMFT | 02 | Vimentin, SMA, Desmin, ALK 1 |
| | Myxofibro Sarcoma | 02 | Vimentin , SMA |
| Pericytic Tumour | Glomus tumour | 01 | SMA, Caldesmon |
| Smooth Muscle Tumours | Leiomyoma | 02 | Vimentin,Desmin, SMA, Caldesmon |
| | Leiomyosarcoma | 03 | Vimentin, Desmin, SMA, Caldesmon |
| GIST | | 05 | SMA, DOG 1, CD 117, CD 34 |
| Nerve sheath tumours | Schwannoma | 13 | S 100 |
| | Neurofibroma | 02 | Vimentin, S 100, CD 34, EMA |
| | MPNST | 05 | S100 focal |
| Tumours of Uncertain Differentiation | Myxoma | 01 | Vimentin |
| | Angiomatoid Fibrous Histiocytoma | 01 | Desmin, CD 68, EMA |
| | Angiomyolipoma | 03 | SMA, Caldesmon |
| | Desmoplastic small round cell tumour | 01 | Vimentin, Desmin, EMA, Pan CK,WT 1 |
| | Undifferentiated Sarcoma | 01 | Vimentin, CD 34 |

In the present study, IHC performed in 50 cases, in which 26 were benign, 9 were intermediate and 15 were benign.

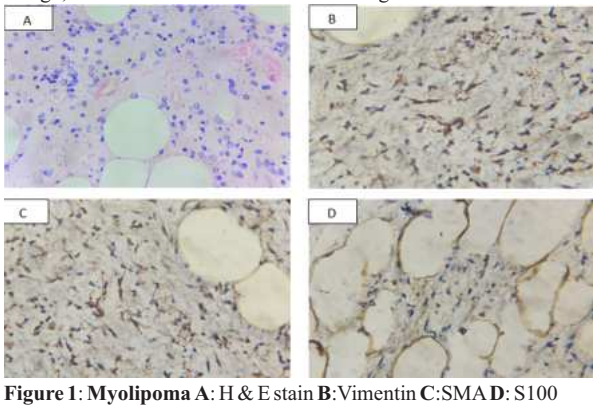



**Figure 1**: **Myolipoma A**: H & E stain **B**:Vimentin **C**:SMA **D**: S100

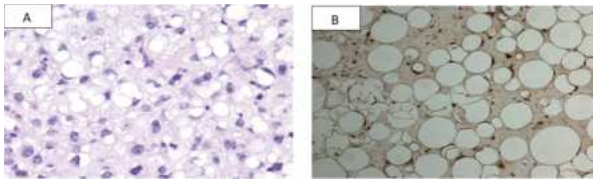



**Figure 2: Liposarcoma - well differentiated A:** H & E stain **B**: MDM2

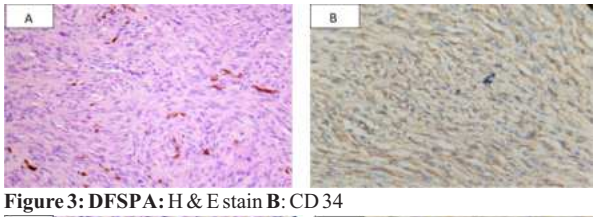
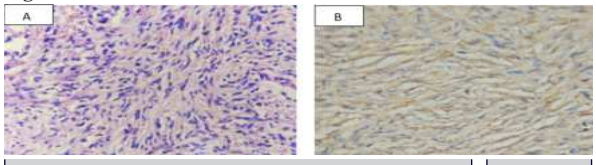



**Figure 3: DFSP A:** H & E stain **B**: CD 34



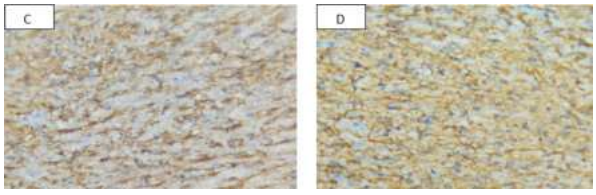



**Figure 4: GIST A:** H & E stain **B**: CD 34 **C**: CD 117 **D**: DOG 1

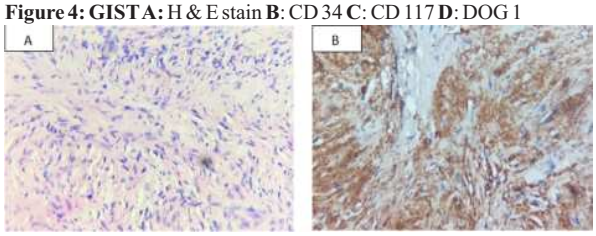



**Figure 5: Schwannoma:** H & E stain **B**: S100 diffuse positive

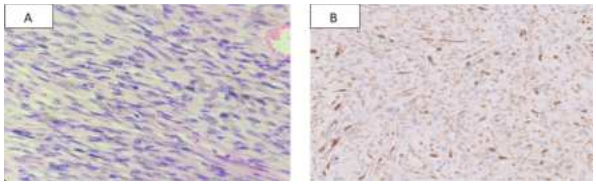



**Figure 5: MPNST:** H & E stain **B**: S100 Focal positive

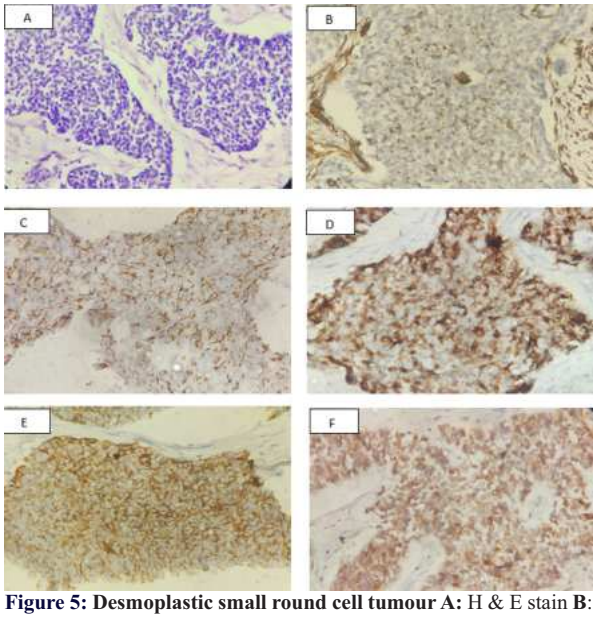



**Figure 5: Desmoplastic small round cell tumour A:** H & E stain **B**: Vimentin **C**: Desmin **D**: EMA **E**: Pan CK **F** : Wt1

## DISCUSSION

Here we have studied the incidence, gender, age and site wise distribution of various soft tissue tumours and supporting or diagnostic role of immunohistochemistry with their histopathological examination. Comparison of results of present study with previously reported studies is done.

**Table 16: Comparative Analysis Of Benign To Malignant Soft Tissue Tumours**

| Study | Benign (%) | Intermediate (%) | Malignant (%) |
|---|---|---|---|
| Megha Sharma et al.[8] (2015) | 88.2% | 1.8% | 10% |
| Gayatri Gogoi et al.[9] (2017) | 92.8% | 00% | 7.60% |
| Present study | **91.33%** | 3.67% | 5% |

The study conducted by Megha Sharma et al.[8](2015), where the benign, intermediate and malignant cases were 88.2%, 1.8% and 10% respectively. The study conducted by Gayatri Gogoi et al.[9](2017), where the benign, intermediate and malignant cases were 92.8%, 00% and 7.60% respectively. In present study out of 300 cases, 274 cases (91.33%) are benign, 11 cases (3.67%) are intermediate and 15 cases (5%) are malignant. Incidence of benign, intermediate and malignant Soft tissue tumours are comparable with above mentioned study.

**Table 17: Comparative Analysis Of Male To Female Ratio Of Overall Soft Tissue Tumours**

| Study | Male to female ratio |
|---|---|
| Ducimetiere et al.[10](2011) | 1.3:1 |
| Megha Sharma et al.[8](2015) | 1.4:1 |
| Hena Paul Sing et al.[11](2019) | 1.2:1 |
| Present study | 1.1:1 |

The study conducted by Ducimetiere et al.[10] (2011) where male to female ratio was 1.3:1, Megha Sharma et al.[8](2015), where male to female ration was1.4:1 and Hena Paul Sing et al.[11](2019), where male to female ratio was 1.2:1.In present study there are 160 males (53.33%) and 140 females (46.67%) with male to female ratio of 1.1:1, which is nearly comparable with above mentioned study.

**Table 18: Comparative Analysis Of Age Wise Distribution Of Soft Tissue Tumours**

| Age group | Megha Sharma et al.[8] (2015) (%) | Sonal Jain et al.[1] (2017) (%) | Present study (%) |
|---|---|---|---|
| **0-10** | 8.2% | 5.1% | 4% |
| **11-20** | 13.6% | 13.1% | 11% |
| **21-30** | 14.7% | 22.1% | 17% |
| **31-40** | 19.5% | 18.9% | 21% |
| **41-50** | 21.1% | 18.2% | **22%** |
| **51-60** | 13.5% | 11.5% | 14% |
| **61-70** | 10% | 8.3% | 7.67% |
| **>70** | 6% | 2.5% | 3.33% |

The study conducted by Megha Sharma et al[8](2015), in which Soft tissue tumours most commonly present in 5th decade follow by 4th and 3rd decade and study conducted by Sonal Jain et al[1](2017), in which Soft tissue tumours most commonly in 3rd decade and followed by 4th and 5th decade of life. In present study Soft tissue tumours most commonly present in 5th decade follow by 4th and 3rd decade which is same as the study of Megha Sharma et al[8](2015).

**Table 19: Site Wise Distribution Of Soft Tissue Tumours**

| Site | Sonal Jain et al.[1] (2017) (%) | Hena Paul Sing et al.[11] (2019) (%) | Present study (%) |
|---|---|---|---|
| **Head and neck** | 29.1% | 22.96% | 23% |
| **Perineum** | 1.9% | 2.59% | 4.67% |
| **Extremities and Chest** | 46.4% | 48.14% | **44.67%** |
| **Back** | 13.7% | 13.33% | 12% |
| **Abdomen** | 8.2% | 7.40% | 12.33% |
| **Retroperitoneum** | - | 4.81% | 3.33% |
| **Other** | - | 0.74% | - |

The majority of soft tissue tumours are present at Extremities and chest (44.67%) followed by head and neck (23%) region which is comparable with study by Sonal Jain et al[1](2017) in which Soft tissue tumours mostly present at Extremities and chest (46.4%) followed by head and neck (29.1%) region also with the study conducted by Hena Paul Sing et al.[11](2019) in which Soft tissue tumours mostly present at Extremities and chest (48.14%) followed by head and neck (22.96%). Result of site wise distribution at abdomen is higher (12.33%) than above mentioned study which is 8.2% in Sonal Jain et al[1] (2017) and 7.40% in Hena Paul Sing et al.[11](2019) study.

**Table 21: Comparative Analysis Of Most Common Benign Adipocytic Soft Tissue Tumour**

| Study | Soft tissue tumour |
|---|---|
| Sonal Jain et al.[1] (2017) | Adipocytic (47.4%) |
| Anuya Badwe et al.[12] (2014) | Adipocytic (54.81%) |
| Present study | Adipocytic (55.67%) |

Among the Soft tissue tumours adipocytic tumours are most common (55.67%), which is comparable with the study by Sonal Jain et al.[1] (2017) (47.4%) and Anuya Badwe et al.[12](2014) (54.81%) .

**Table 22: IHC Marker Wise Comparison Of Soft Tissue Tumours**

| Soft tissue tumour | Shi Wei et al[13] (2017) | Present study |
|---|---|---|

| | | |
|---|---|---|
| **Spindle Cell Lipoma** | CD 34 | CD 34, Vimentin, S100, Desmin |
| **Liposarcoma, well-differentiated, NOS** | MDM2, CDK 4 | S100, MDM2, CDK 4 |
| **Dedifferentiate Liposarcoma** | MDM2, CDK 4 | MDM2, CDK 4, Vimentin, SMA, |
| **DFSP** | CD 34 | CD 34 |
| **GIST** | DOG 1, CD 117 Loss of SDH | DOG 1, CD 117, CD 34, SMA |
| **Glomus Tumour** | SMA , Caldesmon | SMA , Caldesmon |
| **Schwannoma** | S 100 | S 100 |
| **Neurofibroma** | EMA , Claudin | EMA, Vimentin, S100, CD 34 |
| **MPNST** | SOX10, S100, p75NTR | S100 Focal |
| **Desmoplastic small round cell tumour** | PanCK, WT1 | Vimentin, Desmin, EMA, Pan CK, WT1 |


## SUMMARY

The study was conducted at the Department of Pathology (Histopathology and Immunohistochemistry section) in the government medical college for a period of about 2 years, i.e., (May 2022 to April 2024)

**The Following Details Were Observed In The Present Study:**

- During this time period total 300 specimens are received of soft tissue. Out of which 50 cases (16.66%) are supported by immunohistochemistry study.
- Out of 300 total cases, 274 cases are benign soft tissue tumour, 11 cases are of intermediate Soft tissue tumours and15 cases are of malignant Soft tissue tumours.
- The age of the patient ranged from 5 months to 87 years. The age group between 41 to 50 year is mostly affected by Soft tissue tumours.
- The overall gender ratio for Soft tissue tumours is 1.1:1(M:F).
- The most common presentation for almost all soft tissue tumour is mass at local site, which is mostly painless with average duration of 3 months to 4 years .
- Among the various types of soft tissue tumours, adipocytic tumours are most common followed by smooth muscle tumours, nerve sheath tumours, vascular tumours, fibroblastic/ myofibroblastic tumours, tumours of uncertain differentiation, gastro intestinal stromal cell tumours, so called fibrohistiocytic tumours and pericytic tumour.
- Most common adipocytic tumour is lipoma present at Extremities and Back, common malignant adipocytic tumours are Liposarcoma, well-differentiated, NOS type and Dedifferentiated liposarcoma present at retroperitoneum and lower Extremities.
- The most common benign smooth muscle tumour is leiomyoma and malignant smooth muscle tumour is leiomyosarcoma of uterus.
- The most common vascular Soft tissue tumours is hemangioma, with it's variants - capillary hemangioma at head and neck region.
- The most common benign nerve sheath tumour is schwannoma at head and neck region and malignant nerve sheath tumour is MPNST at head and neck, retro peritoneum & abdomen .
- The most common benign fibroblastic/myofibroblastic Soft tissue tumours is fibroma at , intermediate are DFSP and IMFT and malignant was myxofibro sarcoma most commonly at Extremities.
- The most common benign soft tissue tumours of uncertain differentiation is myxoma at Extremities, intermediate is angiomyolipoma of kidney. Malignant soft tissue tumours in study are desmoplastic small round cell tumour at gastrointestinal tract and undifferentiated sarcoma at extremities.
- Gastrointestinal stromal cell tumors are most commonly found in small intestine.
- The most common so called fibrohistiocytic tumour is tenosynovial giant cell tumour at wrist.
- One case of pericytic tumour- glomus tumour is found at head and neck region.
- IHC reports show, MDM2 and CDK 4 positive for liposarcoma, CD 34 positivity for DFSP. ALK 1 positivity in IMFT, DOG 1 and CD 117 positivity in GIST, SMA and Caldesmon positivity in glomus tumour and S100 marker diffuse positivity in schwannoma and focal positivity in MPNST. EMA positivity in neurofibroma.
- Vimentin marker positivity in all mesenchymal origin tumours..
- CD34 positivity seen in adipocytic tumours, DFSP, GIST, Neurofibroma and undifferentiated sarcoma.


## CONCLUSION

Most common benign soft tissue tumour in above study is lipoma, intermediate tumour is angiomyolipoma and malignant tumour is malignant peripheral nerve sheath tumour (MPNST). Soft tissue tumours are having overlapping histopathological features so many time it is not possible to conclude precisely by histopathological diagnosis, so immunohistochemistry is must to reach to the perfect diagnosis.

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