INTRODUCTION

- Soft Tissue Sarcoma (STS) are a rare and heterogeneous group of solid tumors
- The median age at diagnosis for all STS is 65 years, but incidence varies by histological subtype
- The management of STS has evolved over last two decades with advances in imaging, histopathology, molecular biology, cytogenetic and multimodality management
- The 1 and 5 year overall survival rates using aggressive surgical approach including amputation is 80 and 60% respectively
- Brachytherapy has a better potential to spare normal tissues and avoid various complications including bone fractures, subcutaneous fibrosis or distal lymphedema.
- The role of Brachytherapy as an adjunct to radical surgery has been explored by several investigating teams including the major studies done at Memorial Sloan-Kettering cancer center
- This study is carried out to review the clinical outcome and quality of life in patients with Soft Tissue Sarcoma treated at our center through High dose rate interstitial brachytherapy at our center.

MATERIAL AND METHODS

- Study subjects included from 2011 to 2015
- Patient characteristics are presented in Table 1.
- All patients with histologically proven STS and found eligible for anesthesia and major surgery and agreeing to undergo brachytherapy were included.
- There were 11 patients; 6 Males and 5 Females; the mean age was 49 years (Range 22 – 82 years).
- The tumor was located in Limbs in 7 patients, shoulder in 2 patients and trunk in 2 patients.
- The catheters were placed intraoperatively, immediately following wide local excision of tumor in all 11 patients and number of catheters varied according to the size of tumor bed and coverage needed. All 11 patients were advised for elective wide excision and intraoperative brachytherapy after achieving histological diagnosis.
- They were treated with dose of 3.5Gy per fraction 6 hours apart for period of 5 days. 1 Patient was subjected to boost of additional 1 fraction of 4 Gy.
- The median dose was 3.5Gy per fraction with median fraction of 10 (Range 10-13 fractions);
- The median total dose received was 35Gy/10fr.
- Variations on prescribed dose was affected on variable factors including anatomic site and proximity to sensitive structures, geometric equality of implants.
- The average mean follow up duration was 12 months (Range 1-42 months).

<table>
<thead>
<tr>
<th>Table 1. Patient Characteristics (N = 11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (yrs)</td>
</tr>
<tr>
<td>Range</td>
</tr>
<tr>
<td>M:F Ratio</td>
</tr>
<tr>
<td>Site</td>
</tr>
<tr>
<td>Limbs</td>
</tr>
<tr>
<td>Shoulder</td>
</tr>
<tr>
<td>Trunk</td>
</tr>
<tr>
<td>Histological grade</td>
</tr>
<tr>
<td>Low Grade of well differentiated</td>
</tr>
<tr>
<td>Moderately Differenitated</td>
</tr>
<tr>
<td>High Grade or poorly Differenitated</td>
</tr>
<tr>
<td>Stage</td>
</tr>
<tr>
<td>Stage I</td>
</tr>
<tr>
<td>Stage II</td>
</tr>
<tr>
<td>Stage III</td>
</tr>
<tr>
<td>Average Follow-up period (months)</td>
</tr>
<tr>
<td>Range (Months)</td>
</tr>
</tbody>
</table>

RESULTS

- The median age of the patients was 48 years (Range 22 – 82 years).
- There was no significant sex predilection noted (6:5).
- Extremity sarcomas were more common than non extremity sarcomas (64% vs 36%).
- The patients presented with swelling (100%) which being the most common presenting complaint.
- The median tumor size was 4.8 cm (Range 2 – 20 cm).
- The most common histopathological subtype is spindle cell sarcoma.
- 1 patient developed local recurrence (9.09%) and 2 patients developed metastases (18.18%).
- Rest 8 patients (72.72%) were locally controlled.
- Two Patients (18.18%) died of other causes which included post chemotherapy sepsis and Cardiac Failure.
- Most patients developed varying degrees of skin erythema of skin surrounding and overlying the implant site around 5-10 days following implant which was managed accordingly and subsided subsequently. No other major complications were noticed.

DISCUSSION

- Interstitial Brachytherapy with Iridium 192 as adjuvant to radical surgery has been shown to provide good local control rates in STS.
- The advantages of brachytherapy over EBRT include:
  - Direct implantation of catheters in the tumor site and encompassing the residual microscopic disease
  - Due to rapid fall of the dose, the surrounding normal tissues are relatively spared.
  - Adjuvant brachytherapy showed improvement in local control but had no significant impact on distant metastasis or tumor related mortality.
  - Radiotherapy is reserved in cases of small lesions in view of positive or uncertain margins and usually surgery is the curative management in small lesions with negative margins.
- The ABS recommends the role of brachytherapy as adjuvant monotherapy for patients with completely resected intermediate or high grade sarcomas of extremities or superficial trunk with negative margins.
- In our study all the lesions were large and 2 had close or positive margins and the overall local control rate was 72.72%.
- MRI is the imaging modality of choice for extremity sarcoma and CT Scan preferred for retroperitoneal STS and lung evaluation to rule out metastases.
- Grading is more important than the stage of STS as it forms a good tool for predicting the prognosis and survival.

CONCLUSION

- The results in our study suggested the importance of HDR Brachytherapy in management of Soft Tissue Sarcoma.
- The local control rate was 72.72%.
- The dose of 3.5Gy over 10 fractions over 5 Days was found to be effective in local control and limb salvage
- Successful results are expected with Brachytherapy with care of negative margins and adequate treatment coverage of the tumor bed and margins
- Brachytherapy as an adjuvant monotherapy following surgery plays a major role in management of STS.

REFERENCES