CLINICAL CHARACTERISTICS & TREATMENT OUTCOME PATTERNS OF SOLITARY FIBROUS TUMORS: A SINGLE-INSTITUTION RETROSPECTIVE ANALYSIS

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Introduction

- Solitary fibrous tumors (SFTs) are rare mesenchymal neoplasms that display a broad spectrum of clinical behaviors.
- They are characterized by the NAB2–STAT6 gene fusion, a defining alteration that drives STAT6 nuclear expression and aids in histopathologic confirmation.
- There remains limited large-scale, site-diverse data describing real-world clinical and molecular trends in SFT.
- To address these gaps, we performed a retrospective institutional analysis of 95 patients to characterize demographic distributions, tumor site diversity, grading and staging patterns, and molecular testing trends within a large tertiary cancer center.
- By correlating molecular results—including NAB2–STAT6 fusion status and other co-alterations—with clinicopathologic features and outcomes, we sought to provide a more comprehensive view of real-world SFT behavior and identify factors that may inform surveillance and management strategies.

Methodology

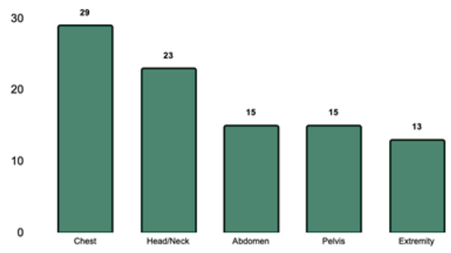
- We conducted a retrospective review of patients treated at the University of Miami for SFTs using an institutional REDCap registry.
- Non-SFT or indeterminate cases after additional review of pathology or molecular sequencing were excluded.
- Variables studied included demographics (sex, race, ethnicity), medical history (prior malignancy, autoimmune disease), family cancer history, and clinical features (primary site, size, grade, stage, metastatic and recurrence data).
- Molecular fields captured sequencing status, NAB2–STAT6 exon breakpoints, and other pathogenic alterations (e.g: TP53, TERT, FANCD2, ATM).

Results

Table 1: Descriptive Statistics (Demographics)

Race	White: 84% (n = 80) Black: 6% (n = 6) Other / Unknown: 10% (n = 9)
Ethnicity	Hispanic or Latino: 44% (n = 42) Non-Hispanic: 52% (n = 49) Unknown: 4% (n = 4)
Sex Assigned At Birth	Female: 55% (n = 52) Male: 45% (n = 43)

Figure 1: Primary Tumor Location

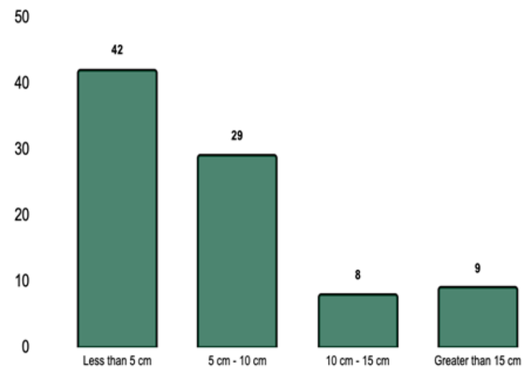


*Seven data points with unknown size were excluded

Table 2: Descriptive Statistics (History)

Comorbid Autoimmune Disease	Yes: 5.3% (n = 5)* No: 94.7% (n = 90) *most commonly hypothyroidism, polymyalgia rheumatica, immune thrombocytopenia, multiple sclerosis*
Existing Cancer History at Time of Diagnosis	Yes: 16.8% (n = 16)* No: 83.2% (n = 79) *most commonly melanoma and prostate cancer*
Family History of Cancer	Yes: 43.2% (n = 41)* No: 56.8% (n = 54) *most commonly breast and prostate cancer*

Figure 2: Primary Tumor Size (cm)



**Largest dimension selected for analysis

Table 3: Molecular Testing

NAB2-STAT6 Breakpoints	**ex4:ex2:** 37.5% (n = 6) **ex6:ex17:** 12.5% (n = 2) **ex6:ex16:** 12.5% (n = 2) **ex2:intr1:** 12.5% (n = 2) **Unknown:** 25.0% (n = 4)
Other Genetic Alterations	**TP53:** 5 cases* **TERT:** 2 cases **BCOR:** 2 cases **RB1:** 2 cases *most frequently noted mutations

Figure 3: Stage at Diagnosis

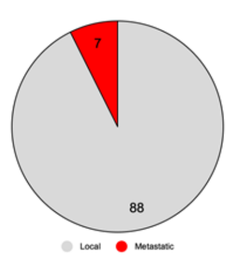
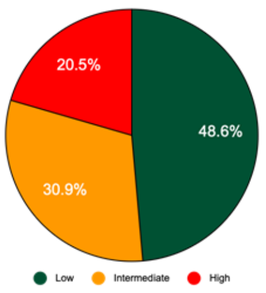


Figure 4: Tumor Grade



- Lung was the predominant site of metastasis, present in 57.1% of metastatic cases, followed by liver (28.6%), bone (14.3%), and pleura/chest wall (0%).
- Patients presenting with metastases had a higher likelihood of intermediate- or high-grade disease (57.1%) and large tumors (>10 cm, 42.9%; >15 cm, 28.6%).
- Recurrence was documented in 25.3% of evaluable cases. The lung was again the most common recurrence site (66.7%), followed by pelvis or abdomen (29.2%).
- The median time to recurrence was approximately 3.51 years. Recurrence occurred in 17.0% of low-grade tumors, compared with 30.8% of intermediate-grade and 50.0% of high-grade tumors.

Conclusion

- In this institutional cohort of 95 solitary fibrous tumor patients, the data demonstrate several consistent clinical trends.
- SFTs remain broadly site-diverse with chest/lung/pleura and pelvis/abdomen each ~30% of primaries.
- Most cases are localized at diagnosis
- Larger size and higher grade are common among metastatic presenters.
- Lung is the dominant site of both initial metastasis and recurrence, with a median time to recurrence of ~3.5 years.
- These findings highlight the importance of routine documentation of size, grade, and molecular status, and they reinforce lung-focused surveillance strategies given the propensity for pulmonary spread and recurrence.

Future Directions

- 150 samples from the University of Miami were sent for molecular profiling analysis and are underway to correlate the breakpoints and other molecular findings with treatment outcomes and other patient characteristics
- The Horowitz Solitary Fibrous Tumor Patient Registry is now open to allow us to scale testing on SFT patients worldwide

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