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A Five-Year Review of Soft Tissue Tumors with Intermediate Malignant Potential and Soft Tissue Sarcomas in a Tertiary Hospital: University of the Philippines – Philippine General Hospital*

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ABSTRACT

Objective. Describe the epidemiology of Soft Tissue Tumors with Intermediate Malignant Potential (STTI) and Soft Tissue Sarcomas (STS) diagnosed in Philippine General Hospital, Department of Laboratories, Section of Surgical Pathology, from years 2014 to 2018.

Methodology. We utilized a descriptive, retrospective, cross-sectional study design and involved all newly-diagnosed cases of STTI and STS that fit the specified set of inclusion and exclusion criteria.

Results. Out of 1896 cases of probable STTI and STS on initial screening, 680 cases (36%) were included in the study. Of the 1216 excluded cases, 815 (43%) needed ancillary diagnostic workup for definitive classification. Sarcoma, Not Otherwise Specified (n=149; 21.9%; 95% CI [18.80, 25.02]) was the most common diagnosis, followed by gastrointestinal stromal tumor (n=91; 13.4%; 95% CI [10.82, 15.94]) and leiomyosarcoma (n=62; 9.1%; 95% CI [6.95%, 11.28%]). Median age was 47 years, with a slight female predominance (n=371; 55%; 0.83 male to female ratio). The extremities (n=244, 36%) were the most frequent site.

Conclusion. The significant amount of cases excluded in the study may account for the differences of distribution. Despite the increased immunohistochemistry tests available, there is still an apparent inaccessibility to ancillary diagnostic methods that are necessary in the diagnosis of STTI and STS.

Key words: soft tissue neoplasms, sarcoma, Philippines

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INTRODUCTION

Soft tissue is defined as nonepithelial extraskeletal tissue of the body, principally derived from the mesoderm, with some contribution from the neuroectoderm. It is represented by the voluntary and involuntary muscles, fat, fibrous tissue and vessels supporting these tissues. Components of the peripheral nervous system are included as well, since tumors from nerves present as soft tissue masses with similar differential diagnoses and therapeutic measures. It does not include the reticuloendothelial system, glia, and supporting tissue of various parenchymal organs.[1,2]

Tumors arising from soft tissues are mainly classified according to their line of differentiation or adult tissue they resemble. They are further divided into benign and malignant forms. Benign tumors resemble their normal tissue counterparts, have a limited capacity for autonomous growth, exhibit little tendency to invade and have a low rate of local recurrence following conservative therapy. Malignant tumors, or STS, in contrast, are locally aggressive, capable of invasive growth, recurrence, and distant metastasis, and require radical surgery to ensure total removal. Unfortunately, this dichotomous differentiation is not perfect as the term sarcoma does not correlate well with likelihood or rapidity of metastasis. Due to this, STS are sometimes qualified by a statement regarding degree of differentiation or the histologic grade. Tumors of intermediate or borderline malignancy

are characterized by frequent recurrence but rare metastasizing potential.[1,3,4]

Benign soft tissue tumors outnumber malignant tumors by a factor of 50, according to Goldblum et al. STS are relatively rare compared to other neoplasms and reported incidences vary from less than 1 to 1.5% of all cancers, with an annual incidence of 50 per million population. The incidence and distribution of STS appear to be similar in different regions of the world. This is also noted by WHO wherein no significant geographical difference in sarcoma incidence was found. Despite this, it has been reported that a relationship exists between patient age, sex, tumor histologic type and tumor site.[1,3]

According to the SEER database, the incidence of STS varies with age. In children younger than 10 years of age, the annual incidence was 0.9/100,000 children. It was found to be higher in adults over the age of 70 years, with an incidence of 18.2/100,000 adults. The WHO reports the median age at diagnosis to be at 65 years.[2]

In general, STS are found to be more common in males, but gender and age-related incidences vary among the histologic types. There is also no proven racial variation.[1,2]

STS can occur anywhere, but most arise from the large muscles of the extremities, the chest wall, the mediastinum, and the retroperitoneum. Seventy-five percent are located in the extremities, most commonly in the thigh. Ten percent each are found in the trunk wall and retroperitoneum.[3,5]

The diversity of soft tissue tumors is emphasized in the 2020 WHO Classification of Tumors of Soft Tissue, wherein they are listed according to their line of differentiation. Tumors are classified under undifferentiated/unclassified sarcomas if no line of differentiation is identified using presently available technology and is a diagnosis of exclusion. They account for 20% of all STS and occur in all ages with no observed sexual predilection.[3]

According to the SEER Cancer Statistics Review (2012-2016), sarcoma, not otherwise specified (22.3%) was found to be the most common STS diagnosis reported. This is followed by liposarcoma (16.6%), leiomyosarcoma (12.8%), miscellaneous other sarcomas (8.1%), fibrosarcoma (7.9%), synovial sarcoma (4.6%), dermatofibrosarcoma (4.3%), malignant fibrous histiocytoma (4.2%), hemangiosarcoma (4.1%), and giant cell and extraskeletal bone sarcomas (3.2%).[2]

A systematic review on STS in the Asia-Pacific Region was done by Ngan et al., in 2013. Thirty-five published articles were included, 29 of which were from Australia, Korea and Taiwan. No study from Indonesia, New Zealand and the Philippines met the inclusion criteria. Pleomorphic sarcoma and liposarcoma were found to be the most common histologic type reported (23/32 studies). The mean or median age of patients with STS was found to be 40 years or older (27/30 studies), while the minimum age was younger than 18 years (14/30 studies). They found most sarcomas to be located in the extremities, consistent with reported literature worldwide.[6]

In a study by Ngelangel and Wang on Cancer and the Philippine Cancer Control Program in 2002, STS were reported to be 4.2 per million among children aged 0-14 years old. Rhabdomyosarcoma and fibrosarcoma were the only specific entities cited with incidence rates of 2.3 and 0.8 per million, respectively. However, this study was limited to Rizal province and four cities in Metro Manila, namely, Quezon, Manila, Caloocan and Pasay. These incidence rates were based on data gathered in the said areas during the years 1983 to 1992.[7]

OBJECTIVES

General Objective

- Describe the epidemiology of STTI and STS diagnosed in Philippine General Hospital (PGH), Department of Laboratories, Section of Surgical Pathology, from January 1, 2014 to December 31, 2018.

Specific Objectives

- Enumerate all cases of STTI and STS diagnosed in the hospital.
- Determine the distribution of STTI and STS diagnosed in the hospital, according to age, sex, tumor classification, tumor histologic type and tumor site.
- Compare the epidemiology of STTI and STS diagnosed in the hospital with published literature.

METHODOLOGY

Study Design

This is a descriptive, retrospective, cross-sectional study design.

Study Population

The study involved all cases of diagnosed STTI and STS, in accordance with the inclusion criteria below. It enumerated all cases that fulfilled the set criteria within the time period specified.

Inclusion Criteria

1. All newly-diagnosed inpatient and outpatient cases rendered with a definite diagnosis of STTI and STS (inclusive of soft tissue tumors with intermediate and malignant potential listed in the ***WHO Classification of Tumors of Soft Tissue*, 2020**) from January 1, 2014 to December 31, 2018, in the PGH, Department of Laboratories, Section of Surgical Pathology, confirmed using histomorphologic assessment, with or without ancillary immunohistochemistry and/or molecular testing.

Exclusion Criteria

1. Cases rendered with a definite diagnosis of a benign soft tissue tumor, as listed in the ***WHO Classification of Tumors of Soft Tissue*, 2020**.
2. Cases of soft tissue tumors whose biologic behavior cannot be classified as benign, intermediate, or malignant due to limited information in the final diagnosis.
3. Cases with incomplete data on age, sex, tumor site and histologic diagnosis.
4. Cases of recurrent or persistent STTI and STS that are status post treatment (e.g., chemotherapy, radiotherapy, etc.).

Data Collection and Processing

Data were obtained from surgical pathology reports of all patients that have been diagnosed with STTI and STS from January 1, 2014 to December 31, 2018. Only data on the patients' age, sex, tumor site and histologic diagnoses were obtained from the surgical pathology reports.

A research assistant was hired to assist in the data collection, with permission requested from the Chair of the Department of Laboratories, as well as from the Head and Supervisor of the Section of Surgical Pathology. The principal investigator trained the research assistant regarding the data collection procedure, with emphasis on patient privacy and confidentiality.

Retrieval of anonymized data from surgical pathology reports into data collection forms (Appendix A) were facilitated by an authorized laboratory technologist who subscribed, sworn and signed the Confidentiality and Non-Disclosure Undertaking of the hospital. The data collection forms were then given to the research assistant for encoding into the master spreadsheet (Appendix B).

Data collection was done within office hours and within the Section of Surgical Pathology, to ensure that records remain in the section and minimize risk of breach of patient confidentiality. A brief diagrammatic workflow is provided in Appendix C.

Intervention

Not applicable.

Outcome

Epidemiology of STTI and STS in PGH.

Analysis

Data were collected and tabulated using Microsoft Excel 2019. Microsoft Excel 2019 and Stata version 16 were used to analyze the data which were entered according to a coding manual (Appendix D).

Descriptive statistics were computed for all demographic variables available using Microsoft Excel 2019 and Stata software. Summary statistics (i.e., mean, range, median) were used for quantitative variables like age while for categorical data, data were summarized using frequencies and proportions. Tables and graphs were utilized to display findings more clearly. Data processing and analysis were carried out using Microsoft Excel 2019 and Stata software.

Ethical Considerations

Prior to commencement of the study, an institutional ethical approval coursed through the PGH Expanded Hospital Research Office was sought. The study was conducted only upon approval from the University of the Philippines Manila Research Ethics Board (UPMREB).

The patient demographic and clinical information needed in the study were retrieved from the surgical pathology reports filed at the Department of Laboratories, Section of Surgical Pathology. Patients names were not obtained. There was no patient-investigator interaction and only surgical pathology records were accessed for review.

The principal investigator solely funded this research.

Waiver of consent

A waiver of consent was requested from UPMREB since there are no risks to participants and the method of data collection ensured that none of the participants were identifiable and anonymity was ensured (NEGHHR 2017 provision 16.2.3 and 17.1). The waiver did not adversely affect the rights and welfare of the participants (NEGHHR 2017 17.2) and the research was not practicably carried out without the waiver (NEGHHR 2017 17.3). A plan for data collection was discussed earlier in the protocol.

RESULTS AND DISCUSSION

A total of 680 cases diagnosed as STTI and STS were identified and included in the study after extensive review of all surgical pathology reports signed out at PGH, Department of Laboratories from January 1, 2014 to December 31, 2018. This comprised 36% of the 1896 cases of probable STTI and STS gathered on initial screening (Figure 1). Steps were taken to ensure that each diagnosis belonged to only one patient. Cases of recurrent or persistent STTI and STS that underwent

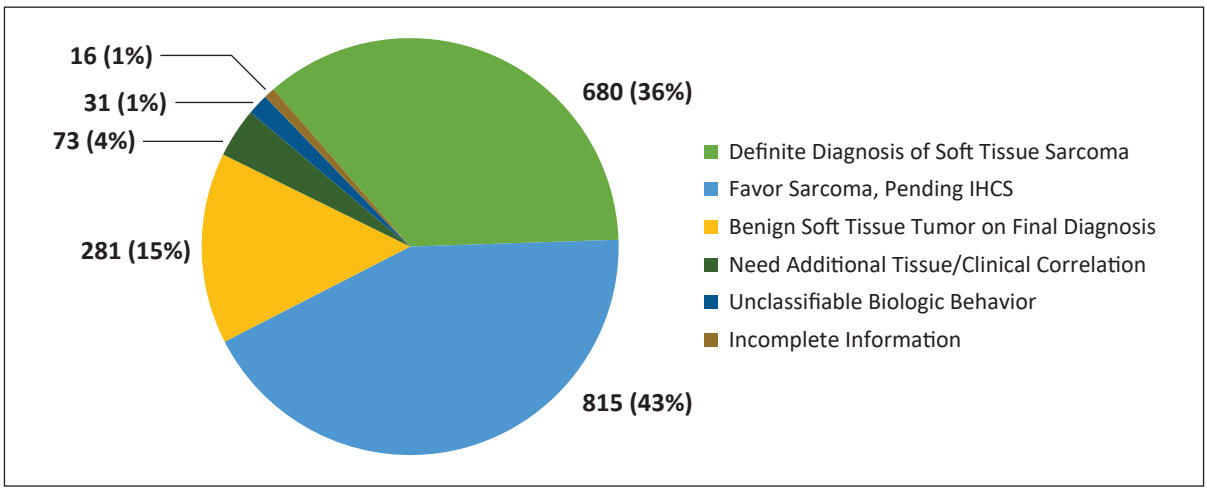

Figure 1. Distribution of cases of probable STTI and STS on initial screening.

treatment (e.g., chemotherapy, radiotherapy, etc.) were counted as one, together with the initial diagnosis prior to treatment, so as to prevent duplication of counts.

A total of 1216 out of 1896 cases (64%) of probable STTI and STS were excluded upon initial screening. Majority (n=815 out of 1216, 67%) of the inconclusive cases were either attributed to total lack of, or incomplete, immunohistochemical (IHC) workup (Table 1). This is a significant finding given the setting of a tertiary referral hospital, highlighting the need for improvement of availability and accessibility of necessary ancillary diagnostic tests, including, but not limited to immunohistochemistry methods and cytogenetic studies.

Figure 2 shows an increasing trend in the number of STTI and STS diagnosed in PGH from January 1, 2014 to December 31, 2018.

Figure 3 shows the age and sex distribution of STTI and STS in PGH from 2014-2018, stratified according to age. The 2020 WHO Classification of Tumors of Soft Tissue reports the general distribution of sarcomas to have a slight male predominance. Results of the study show that there is a slight, albeit insignificant, female predominance (n=371; 55%; 95% CI [50.82, 58.30]; 0.83 male to female ratio; p value=0.9997), over males (n=309; 45%; 95% CI [41.70, 49.18]) in the sarcomas diagnosed in PGH.

As with other malignancies, sarcomas are increasingly common with older age, with a reported median age of 65 years.[8] Results showed that sarcomas were most common among the older adults, 45-64 years of age (n=240, 35%), however, with a much younger median age of 47 years. This finding is still consistent to the reported "mean or median age" of "40 years or older" (n=27 studies) in the systematic review of STS in the Asia-Pacific Region by Ngan et al., in 2013.[6]

The order of distribution of sarcomas according to age and tumor classification is shown in Figure 4. Sarcomas have been reported to have varied age-related incidences. Of special note is embryonal rhabdomyosarcoma, which is known to occur almost exclusively in children, and synovial sarcoma, which mostly occurs in young adults. Results of the study revealed that of the 11 cases of embryonal rhabdomyosarcoma NOS in the years 2014-2018, ten of these were found to be in patients less than 18 years old (range = 3 to 22 years old), with a median age of 10 years. Another 12 cases of sarcomas were

Table 1. Summary of excluded cases

Reason for exclusion	Number of cases (%)
Cases favoring the diagnosis of STTI/STS, pending recommended immunohistochemical studies to exclude other tumors.	815 (67)
Cases rendered with a final diagnosis of a benign soft tissue tumor.	281 (23)
Cases with STTI/STS in the differential diagnosis but with recommendation for additional tissue biopsy, excision, or clinical correlation for definite classification.	73 (6)
Cases of probable STTI/STS whose biologic behavior cannot be classified as benign, intermediate, or malignant due to limited information in the final diagnosis.	31 (3)
Cases of probable STTI/STS with incomplete data on age, sex, tumor site and histologic diagnosis.	16 (1)
Total	**1216**

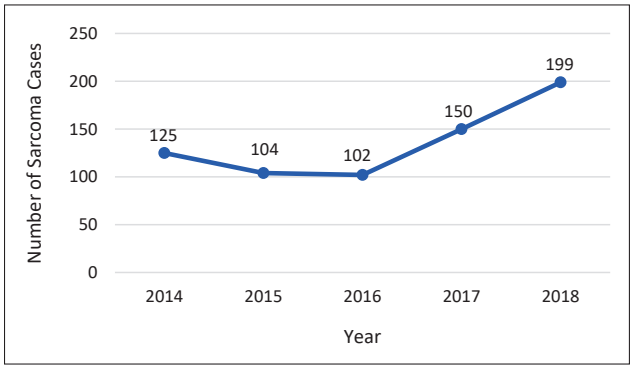

Figure 2. STTI and STS diagnosed in PGH from January 1, 2014 to December 31, 2018.

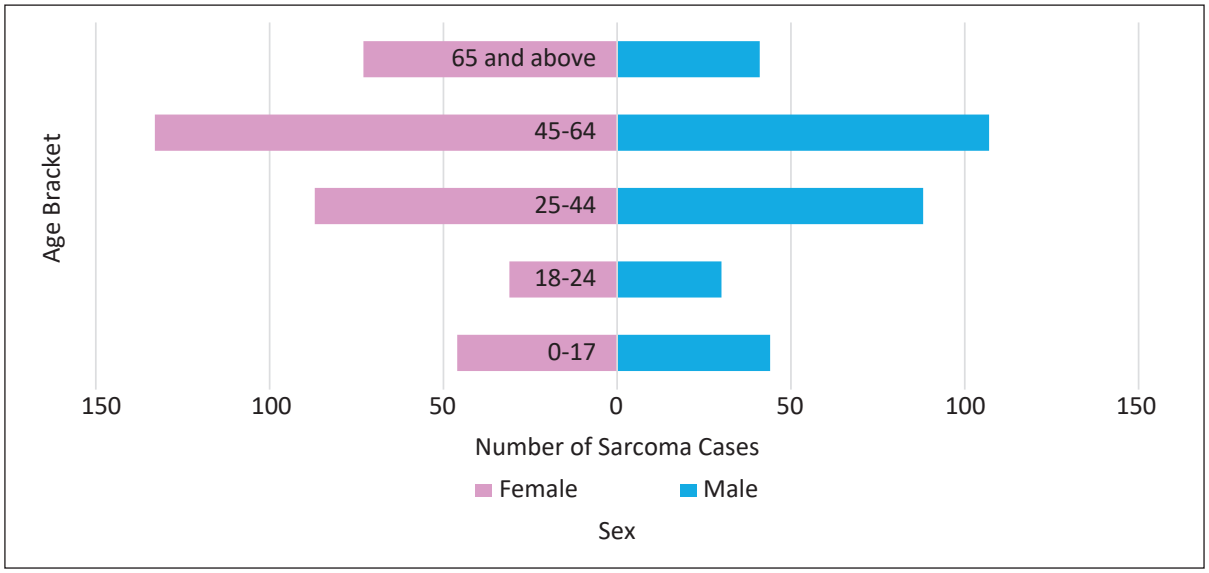

Figure 3. Age and sex distribution of STTI and STS diagnosed in PGH from January 1, 2014 to December 31, 2018.

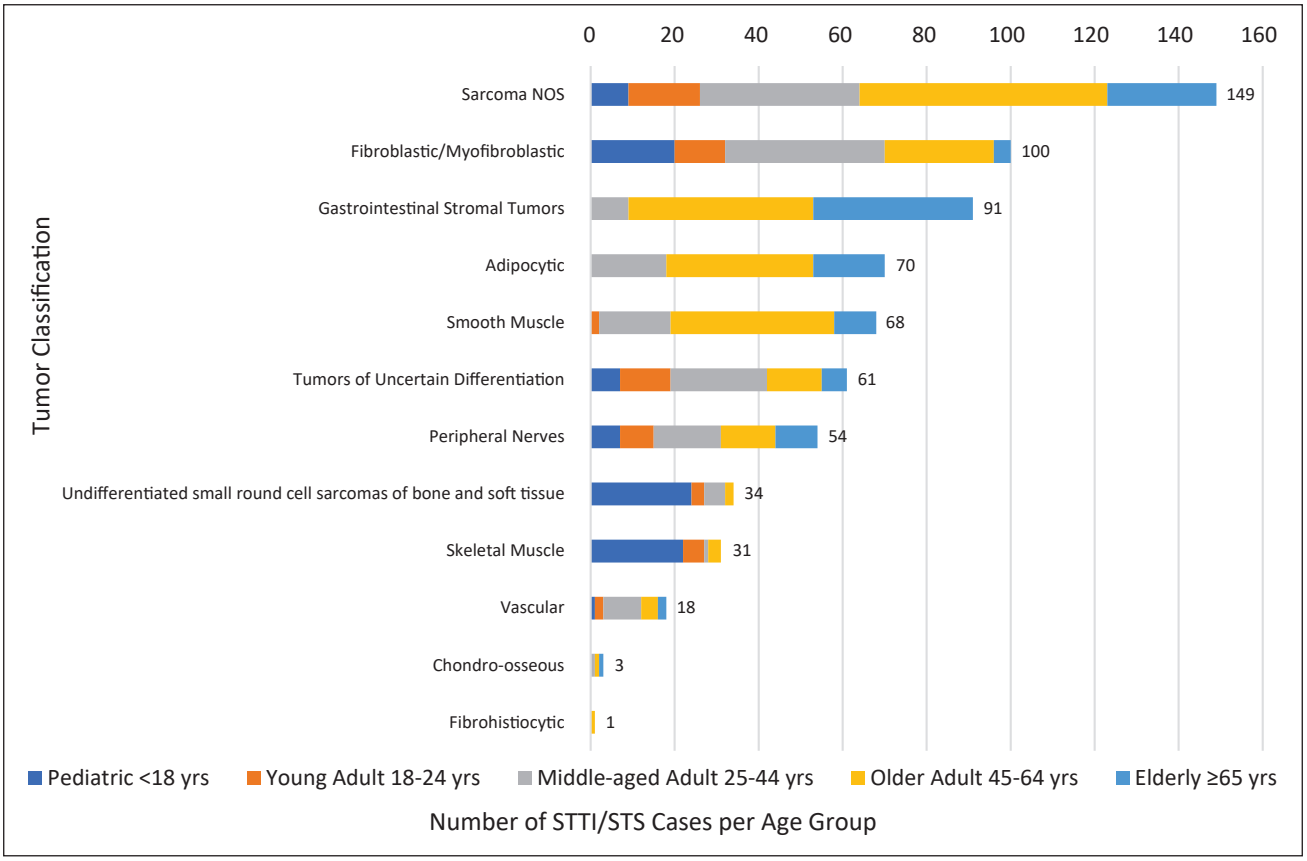

Figure 4. Distribution of STTI/STS diagnosed in PGH from January 1, 2014 to December 31, 2018 according to age and tumor classification.

diagnosed as "Rhabdomyosarcoma", without further subclassification (median age = 12.5). Among these, six cases were below 18 years old. Based on the epidemiology of rhabdomyosarcomas in this age group, some of these may in fact be of embryonal subtype.

Among the sarcomas with definite tumor classification, fibroblastic/myofibroblastic tumors were the most common (n=100; 14.7%; 95% CI [12.04%, 17.37%]). Majority of the cases were classified under Sarcoma, Not Otherwise Specified (Sarcoma NOS; n=149; 21.9%, 95% CI [18.80%, 25.02%]). This is an additional category, in addition to the diagnoses dictated by the 2020 WHO Classification of Soft Tissue Tumors, arbitrarily delegated in this study and adopted from the SEER database, for cases diagnosed as definite STTI and STS, pending more specific tumor classification. This fact remains to be a significant limiting factor in the diagnosis of STTI and STS and reiterates the need for more advanced techniques in the diagnosis of sarcomas received in our institution.[2,8]

The top ten most common STTI and STS histologic types enumerated in this study are listed in Table 2. The results of this study highlight both the similarities and differences between incidences of diagnosed STTI and STS in different populations. Both the SEER database and results of this study showed Sarcoma NOS (p=0.8055), leiomyosarcoma (p=0.0045), synovial sarcoma (p=1.0000) and dermatofibrosarcoma (p=0.01587) to be among the most commonly diagnosed sarcomas. Leiomyosarcoma and dermatofibroma were found to be significantly different in the two populations (p<0.05). Following

Table 2. Top ten most commonly diagnosed STTI and STS histologic types in PGH, from January 1, 2014 to December 31, 2018, and in SEER, 2012-2016

Results		SEER, 2012-2016	
STTI/STS Histologic Type	**Number of Cases (%)**	**Histologic Type**	**Percentage (%)**
Sarcoma, NOS	149 (21.9)	**Sarcomas, NOS**	22.3
Gastrointestinal stromal tumor	91 (13.4)	Liposarcomas	16.6
Leiomyosarcoma NOS	62 (9.1)	**Leiomyosarcomas**	12.8
Malignant peripheral nerve sheath tumor NOS	54 (7.9)	Miscellaneous other sarcomas	8.1
Ewing sarcoma	32 (4.7)	Fibrosarcomas	7.9
Synovial sarcoma NOS	31 (4.6)	**Synovial sarcomas**	4.6
Solitary fibrous tumor NOS	25 (3.7)	**Dermatofibrosarcomas**	4.3
Myxoid liposarcoma	22 (3.2)	Malignant fibrous histiocytoma	4.2
Fibromatosis	22 (3.2)	Hemangiosarcomas	4.1
Dermatofibrosarcoma protuberans NOS	20 (2.4)	Giant cell and extra-skeletal bone sarcomas	3.2

Sarcoma NOS, gastrointestinal stromal tumor (GIST) is the most common diagnosed STTI/STS in our institution, which was not included in the SEER 2012-2016 ten most common sarcomas. Malignant peripheral nerve sheath tumor (MPNST), Ewing sarcoma, solitary fibrous tumor, myxoid liposarcoma, and fibromatosis were not among the most common in the SEER database.[2]

WHO cites undifferentiated pleomorphic sarcoma (UPS, previously malignant fibrous histiocytoma and listed as such in the 2012-2016 SEER data), liposarcoma, leiomyosarcoma, myxofibrosarcoma, synovial sarcoma,

and MPNST to comprise approximately 65% of STS.[8] In the exhaustive systematic review of STS in the Asia-Pacific region by Ngan et al., pleomorphic sarcoma and liposarcoma were the predominant histologic types.[6]

Solitary fibrous tumor NOS and fibromatosis were among the top ten sarcomas reported in this study. Both tumors belong to the category of Intermediate Malignant Potential in the WHO Classification and were notably absent in the SEER 2012-2016 data, which only reported frankly malignant sarcomas.

Results showed that 36% (n=244) of the STTI and STS diagnosed in PGH were located in the extremities (Figure 5). This is followed by the trunk (n=128, 18.8%) and head and neck (n=126, 18.5%) in close proximity to each other. The data is congruent with the WHO database which also showed the extremities to be the common site, although twice more often at 75%. Ten percent each are found in the trunk wall and retroperitoneum.[8] The extremities were also the most common site of STTI and STS in the systematic review by Ngan et al.[6]

Tables 3 and 4 in the succeeding pages show the overall distribution of sarcomas diagnosed in PGH in the years 2014-2018 according to tumor classification, age, sex and tumor site, respectively. There were four STTI/STS diagnoses that couldn't be classified under the current WHO Classification due to need for further subtyping, namely, "Fibromatosis," "Hemangioendothelioma," "Rhabdomyosarcoma" and "Rhabdomyosarcoma, Embryonal-Alveolar." Separate counts were done for these entries. No case of Malignant Glomus Tumor, under Pericytic/Perivascular STS in the WHO tumor classification, has been diagnosed in the years 2014-2018.

The significant amount of cases excluded in the beginning of the study may account for the differences of distribution in the STTI and STS diagnosed in PGH. Unless these cases are pursued until a specific diagnosis is reached, the true incidence may never be known. Of course, even in the ideal setting, there will be tumors that remain elusive to classification, which may aptly be called true Sarcomas, not otherwise specified. In the United States SEER database for STS in the years 2002-2014, Sarcoma, NOS was the most common category at 14.8%.[2,9] In the latest WHO Classification, these tumors that failed to show any identifiable line of differentiation after analysis using presently available technology are classified under Undifferentiated Sarcoma, which comprises approximately 20% of all STS.[8]

Despite the apparent unmet need in diagnostic ancillary testing, the increased number of diagnosed STTI and STS cases through the years 2014 to 2018 remains to be promising. This may simply be due to an increase in number of patients catered by PGH. However, this may also be reflective of the successful efforts of the Division of Surgical Pathology in acquiring and providing immunohistochemical stains necessary in the diagnosis of STTI and STS. There may have been an increase in the number of tumors, initially diagnosed as nonspecific "Spindle Cell Neoplasms," subjected to immunohistochemical studies, and subsequently rendered with the definitive diagnosis of STTI or STS.

In the recent years, the hospital has been able to increase the number of diagnostic tests which cater specifically to the diagnosis of sarcomas. However, there is still plenty of room for improvement of molecular and cytogenetic testing in the classification of sarcomas. Furthermore, as majority of the patients in PGH belong to the lower socioeconomic strata of the country, other factors such as the accessibility of these more costly diagnostic tests to the catered population of the hospital cannot be discounted.

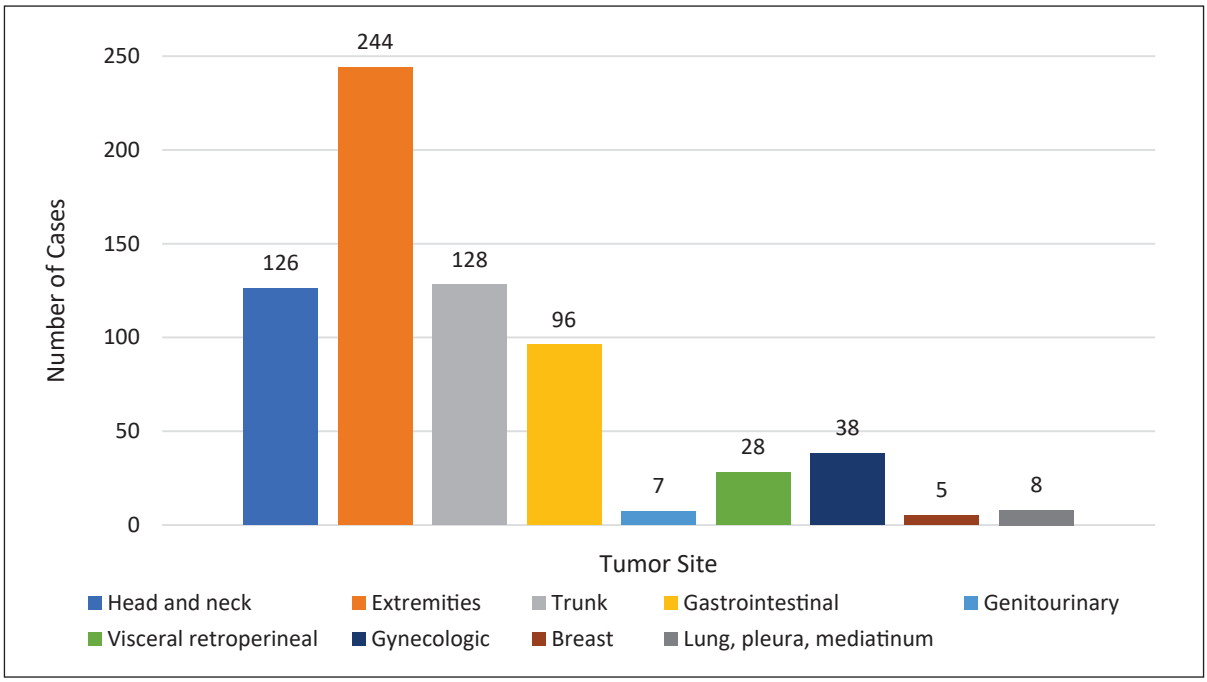

Figure 5. Distribution of STTI and STS diagnosed in PGH from January 1, 2014 to December 31, 2018 according to tumor site.

Table 3. Distribution of STTI and STS according to tumor classification, age and sex, Philippine General Hospital, 2014-2018

Tumor Classification and Histologic Type	Number	Proportion[a]	95% CI[c]	Median age[c] (years)	Age Group, *n*					Sex, *n*	
					Pediatric <18 years	Young adult 18-24 years	Middle-aged Adult 25-44 years	Older Adult 45-64 years	Elderly ≥65 years	Male	Female
Adipocytic	70	10.3%	8.01%, 12.58%	56	**0**	**0**	**18**	**35**	**17**	**40**	**30**
Atypical lipomatous tumor	16	2.4%	1.21%, 3.49%	51.5	0	0	4	10	2	11	5
Liposarcoma, well-differentiated, NOS	16	2.4%	1.21%, 3.49%	58	0	0	3	8	5	9	7
Lipoma-like liposarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Inflammatory liposarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Sclerosing liposarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Dedifferentiated liposarcoma	7	1.0%	0.27%, 1.79%	62	0	0	2	2	3	4	3
Myxoid liposarcoma	22	3.2%	1.91%, 4.57%	55.5	0	0	8	9	5	11	11
Pleomorphic liposarcoma	8	1.2%	0.37%, 1.99%	59	0	0	0	6	2	5	3
Epithelioid liposarcoma	1	0.1%	0.01%, 0.44%	NA	0	0	1	0	0	0	1
Myxoid pleomorphic liposarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Fibroblastic/Myofibroblastic	100	14.7%	12.04, 17.37	**38**	**20**	**12**	**38**	**26**	**4**	**33**	**67**
Fibromatosis[b]	22	3.2%	1.91%, 4.57%	26	9	1	8	4	0	7	15
Solitary fibrous tumor, benign	0	0.0%	NA	NA	0	0	0	0	0	0	0
Palmar/plantar-type fibromatosis	0	0.0%	NA	NA	0	0	0	0	0	0	0
Desmoid-type fibromatosis	4	0.6%	0.01%, 1.16%	31.5	2	0	2	0	0	2	2
Extra-abdominal desmoid	1	0.1%	0.01%, 0.44%	NA	1	0	0	0	0	0	1
Abdominal fibromatosis	1	0.1%	0.01%, 0.44%	NA	0	0	0	1	0	1	0
Lipofibromatosis	0	0.0%	NA	NA	0	0	0	0	0	0	0
Giant cell fibroblastoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Dermatofibrosarcoma protuberans NOS	20	2.9%	1.67%, 4.21%	41	0	3	12	5	0	8	12
Pigmented dermatofibrosarcoma protuberans	0	0.0%	NA	NA	0	0	0	0	0	0	0
Dermatofibrosarcoma protuberans, fibrosarcomatous	1	0.1%	0.01%, 0.44%	NA	0	0	0	0	1	0	1
Myxoid dermatofibrosarcoma protuberans	2	0.3%	0.01%, 0.70%	NA	0	0	0	2	0	1	1
Dermatofibrosarcoma protuberans with myoid differentiation	0	0.0%	NA	NA	0	0	0	0	0	0	0
Plaque-like dermatofibrosarcoma protuberans	0	0.0%	NA	NA	0	0	0	0	0	0	0
Solitary fibrous tumor NOS	25	3.7%	2.26%, 5.09%	44	4	4	10	7	0	8	17
Fat-forming (lipomatous) solitary fibrous tumour	0	0.0%	NA	NA	0	0	0	0	0	0	0
Giant cell-rich solitary fibrous tumour	0	0.0%	NA	NA	0	0	0	0	0	0	0
Inflammatory myofibroblastic tumour	7	1.0%	0.27%, 1.79%	18	3	1	0	3	0	2	5
Epithelioid inflammatory myofibroblastic sarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Myofibroblastic sarcoma	6	0.9%	0.18%, 1.59%	26	0	3	1	2	0	0	6
Superficial CD34-positive fibroblastic tumor	0	0.0%	NA	NA	0	0	0	0	0	0	0
Myxoinflammatory fibroblastic sarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Infantile fibrosarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Solitary fibrous tumor, malignant	2	0.3%	0.01%, 0.70%	NA	0	0	1	1	0	1	1
Fibrosarcoma NOS	4	0.6%	0.01%, 1.16%	37.5	1	0	3	0	0	1	3
Myxofibrosarcoma	3	0.4%	0.01%, 0.94%	65	0	0	0	1	2	0	3
Epithelioid myxofibrosarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Low-grade fibromyxoid sarcoma	1	0.1%	0.01%, 0.44%	NA	0	0	1	0	0	1	0
Sclerosing epithelioid fibrosarcoma	1	0.1%	0.01%, 0.44%	NA	0	0	0	0	1	1	0
Fibrohistiocytic	1	0.1%	0.01-0.44	NA	0	0	0	1	0	1	0
Plexiform fibrohistiocytic tumor	0	0.0%	NA	NA	0	0	0	0	0	0	0
Giant cell tumour of soft parts NOS	1	0.1%	0.01%, 0.44%	NA	0	0	0	1	0	1	0
Malignant tenosynovial giant cell tumour	0	0.0%	NA	NA	0	0	0	0	0	0	0
Smooth muscle	68	10.0%	7.75, 12.25	53.5	0	2	17	39	10	14	54
Smooth muscle tumour of uncertain malignant potential	6	0.9%	0.18%, 1.59%	45.5	0	1	2	3	0	0	6
Leiomyosarcoma NOS	62	9.1%	6.95%, 11.28%	54	0	1	15	36	10	14	48
Skeletal muscle	31	4.6%	2.99, 6.13	10	22	5	1	3	0	15	16
Rhabdomyosarcoma[b]	12	1.8%	0.78%, 2.75%	12.5	7	3	0	2	0	5	7
Rhabdomyosarcoma, "Embryonal-Alveolar"[b]	1	0.1%	0.01%, 0.44%	NA	1	0	0	0	0	1	0
Embryonal rhabdomyosarcoma NOS	11	1.6%	0.67%, 2.57%	10	10	1	0	0	0	5	6
Embryonal rhabdomyosarcoma, pleomorphic	0	0.0%	NA	NA	0	0	0	0	0	0	0
Alveolar rhabdomyosarcoma	5	0.7%	0.09%, 1.38%	14	3	1	0	1	0	3	2
Pleomorphic rhabdomyosarcoma NOS	1	0.1%	0.01%, 0.44%	NA	0	0	1	0	0	1	0
Spindle cell rhabdomyosarcoma	1	0.1%	0.01%, 0.44%	NA	1	0	0	0	0	0	1
Congenital spindle cell rhabdomyosarcoma with VGLL2/NCOA2/CITED2 rearrangements	0	0.0%	NA	NA	0	0	0	0	0	0	0
MYOD1-mutant spindle cell/sclerosing rhabdomyosarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Intraosseous spindle cell rhabdomyosarcoma (with TFCP2/NCOA2 rearrangements)	0	0.0%	NA	NA	0	0	0	0	0	0	0
Ectomesenchymoma	0	0.0%	NA	NA	0	0	0	0	0	0	0

Table 3. Distribution of STTI and STS according to tumor classification, age and sex, Philippine General Hospital, 2014-2018 *(continued)*

Tumor Classification and Histologic Type	Number	Proportion[a]	95% CI[c]	Median age[c] (years)	Age Group, *n*					Sex, *n*	
					Pediatric <18 years	Young adult 18-24 years	Middle-aged Adult 25-44 years	Older Adult 45-64 years	Elderly ≥65 years	Male	Female
Vascular	18	2.6%	1.44, 3.85	30.5	1	2	9	4	2	11	7
Hemangioendothelioma[b]	3	0.4%	0.01%, 0.94%	49	0	0	1	1	1	1	2
Kaposiform hemangioendothelioma	1	0.1%	0.01%, 0.44%	NA	0	1	0	0	0	0	1
Retiform haemangioendothelioma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Papillary intralymphatic angioendothelioma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Composite haemangioendothelioma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Neuroendocrine composite haemangioendothelioma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Kaposi sarcoma	2	0.3%	0.01%, 0.70%	NA	0	0	2	0	0	2	0
Classic indolent Kaposi sarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Endemic African Kaposi sarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
AIDS-associated Kaposi sarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Iatrogenic Kaposi sarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Pseudomyogenic (epithelioid sarcoma-like) haemangioendothelioma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Epithelioid haemangioendothelioma NOS	3	0.4%	0.01%, 0.94%	64	0	0	1	1	1	3	0
Epithelioid haemangioendothelioma with WWTR1-CAMTA1 fusion	0	0.0%	NA	NA	0	0	0	0	0	0	0
Epithelioid haemangioendothelioma with YAP1-TFE3 fusion	0	0.0%	NA	NA	0	0	0	0	0	0	0
Angiosarcoma	9	1.3%	0.46%, 2.18%	30	1	1	5	2	0	5	4
Tumors of peripheral nerves	54	7.9%	5.91, 9.97	33	7	8	16	13	10	26	28
Malignant peripheral nerve sheath tumour NOS	54	7.9%	5.91%, 9.97%	33	7	8	16	13	10	26	28
Malignant peripheral nerve sheath tumour, epithelioid	0	0.0%	NA	NA	0	0	0	0	0	0	0
Melanotic malignant peripheral nerve sheath tumour	0	0.0%	NA	NA	0	0	0	0	0	0	0
Granular cell tumour, malignant	0	0.0%	NA	NA	0	0	0	0	0	0	0
Perineurioma, malignant	0	0.0%	NA	NA	0	0	0	0	0	0	0
Chondro-osseous	3	0.4%	0.01, 0.94	59	0	0	1	1	1	3	0
Osteosarcoma, extraskeletal	3	0.4%	0.01, 0.94	59	0	0	1	1	1	3	0
Gastrointestinal stromal tumors	91	13.4%	10.82, 15.94	62	0	0	9	44	38	41	50
Gastrointestinal stromal tumor	91	13.4%	10.82, 15.94	62	0	0	9	44	38	41	50
Tumors of uncertain differentiation	61	9.0%	6.82, 11.12	36	7	12	23	13	6	30	31
Haemosiderotic fibrolipomatous tumor	0	0.0%	NA	NA	0	0	0	0	0	0	0
Angiomyolipoma, epithelioid	0	0.0%	NA	NA	0	0	0	0	0	0	0
Atypical fibroxanthoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Angiomatoid fibrous histiocytoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Ossifying fibromyxoid tumour NOS	0	0.0%	NA	NA	0	0	0	0	0	0	0
Mixed tumour NOS	0	0.0%	NA	NA	0	0	0	0	0	0	0
Mixed tumour, malignant, NOS	0	0.0%	NA	NA	0	0	0	0	0	0	0
Myoepithelioma NOS	0	0.0%	NA	NA	0	0	0	0	0	0	0
Phosphaturic mesenchymal tumour, malignant	0	0.0%	NA	NA	0	0	0	0	0	0	0
NTRK-rearranged spindle cell neoplasm (emerging)	0	0.0%	NA	NA	0	0	0	0	0	0	0
Synovial sarcoma NOS	31	4.6%	2.99%, 6.13%	29	5	8	13	3	2	12	19
Synovial sarcoma, spindle cell	0	0.0%	NA	NA	0	0	0	0	0	0	0
Synovial sarcoma, biphasic	6	0.9%	0.18%, 1.59%	37	0	2	3	1	0	4	2
Synovial sarcoma, poorly differentiated	0	0.0%	NA	NA	0	0	0	0	0	0	0
Epithelioid sarcoma	1	0.1%	0.01%, 0.44%	NA	0	0	0	1	0	0	1
Proximal or large cell epithelioid sarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Classic epithelioid sarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Alveolar soft part sarcoma	3	0.4%	0.01%, 0.94%	28	1	0	2	0	0	2	1
Clear cell sarcoma NOS	1	0.1%	0.01%, 0.44%	NA	0	0	1	0	0	1	0
Extraskeletal myxoid chondrosarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Desmoplastic small round cell tumour	1	0.1%	0.01%, 0.44%	NA	1	0	0	0	0	1	0
Rhabdoid tumour NOS	1	0.1%	0.01%, 0.44%	NA	0	1	0	0	0	0	1
Perivascular epithelioid tumour, malignant	0	0.0%	NA	NA	0	0	0	0	0	0	0
Intimal sarcoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Ossifying fibromyxoid tumour, malignant	0	0.0%	NA	NA	0	0	0	0	0	0	0
Myoepithelial carcinoma	0	0.0%	NA	NA	0	0	0	0	0	0	0
Undifferentiated sarcoma	3	0.4%	0.01%, 0.94%	60	0	0	1	1	1	1	2
Spindle cell sarcoma, undifferentiated	0	0.0%	NA	NA	0	0	0	0	0	0	0
Pleomorphic sarcoma, undifferentiated	14	2.1%	0.99%, 3.13%	58	0	1	3	7	3	9	5
Round cell sarcoma, undifferentiated	0	0.0%	NA	NA	0	0	0	0	0	0	0
Undifferentiated small round cell sarcomas of bone and soft tissue	34	5.0%	3.36, 6.64	15.5	24	3	5	2	0	22	12
Ewing sarcoma	32	4.7%	3.11%, 6.30%	15.5	23	2	5	2	0	22	10
Round cell sarcoma with EWSR1-non-ETS fusions	0	0.0%	NA	NA	0	0	0	0	0	0	0
C/C-rearranged sarcoma	2	0.3%	0.01%, 0.70%	NA	1	1	0	0	0	0	2
Sarcoma with BCOR genetic alterations	0	0.0%	NA	NA	0	0	0	0	0	0	0
Sarcoma, NOS	149	21.9%	18.80. 25.02	50	9	17	38	59	26	73	76
Total	**680**	**100%**		**47[d]**	**90**	**61**	**175**	**240**	**114**	**309**	**371**

Notes:
a: Blue: proportion of each tumor classification to the total STTI and STS; White: proportion of tumor diagnosis to the total STTI and STS
b: STTI and STS diagnosis as reported in the surgical pathology report, not further subtyped.
c: Not applicable (NA) for entries that are too few for evaluation.
d: Median Age for all STTI and STS sarcomas in the study.

Table 4. Distribution of STTI and STS according to tumor site, Philippine General Hospital, 2014-2018

Tumor Classification and Histologic Type	Tumor Site, *n*									Total
	Head and neck	Extremities	Trunk	Gastro-intestinal	Genito-urinary	Visceral retroperitoneal	Gyneco-logic	Breast	Lung, pleura, mediastinum	
Adipocytic	**4**	**33**	**19**	**4**	**0**	**8**	**0**	**0**	**2**	**70**
Atypical lipomatous tumor	1	**10**	5	0	0	0	0	**0**	0	**16**
Liposarcoma, well-differentiated, NOS	1	7	2	2	0	4	0	0	0	**16**
Lipoma-like liposarcoma	0	0	0	0	0	0	0	0	0	**0**
Inflammatory liposarcoma	0	0	0	0	0	0	0	0	0	**0**
Sclerosing liposarcoma	0	0	0	0	0	0	0	0	0	**0**
Dedifferentiated liposarcoma	1	2	3	0	0	1	0	0	0	**7**
Myxoid liposarcoma	1	8	6	2	0	3	0	0	2	**22**
Pleomorphic liposarcoma	0	5	3	0	0	0	0	0	0	**8**
Epithelioid liposarcoma	0	1	0	0	0	0	0	0	0	**1**
Myxoid pleomorphic liposarcoma	0	0	0	0	0	0	0	0	0	**0**
Fibroblastic/Myofibroblastic	**35**	**26**	**31**	**3**	**0**	**2**	**0**	**1**	**2**	**100**
Fibromatosis	7	10	4	0	0	0	0	0	1	**22**
Solitary fibrous tumor, benign	0	0	0	0	0	0	0	0	0	**0**
Palmar/plantar-type fibromatosis	0	0	0	0	0	0	0	0	0	**0**
Desmoid-type fibromatosis	1	0	3	0	0	0	0	0	0	**4**
Extra-abdominal desmoid	0	1	0	0	0	0	0	0	0	**1**
Abdominal fibromatosis	0	0	0	1	0	0	0	0	0	**1**
Lipofibromatosis	0	0	0	0	0	0	0	0	0	**0**
Giant cell fibroblastoma	0	0	0	0	0	0	0	0	0	**0**
Dermatofibrosarcoma protuberans NOS	3	5	11	0	0	0	0	1	0	**20**
Pigmented dermatofibrosarcoma protuberans	0	0	0	0	0	0	0	0	0	**0**
Dermatofibrosarcoma protuberans, fibrosarcomatous	0	0	1	0	0	0	0	0	0	**1**
Myxoid dermatofibrosarcoma protuberans	1	0	1	0	0	0	0	0	0	**2**
Dermatofibrosarcoma protuberanswith myoid differentiation	0	0	0	0	0	0	0	0	0	**0**
Plaque-like dermatofibrosarcoma protuberans	0	0	0	0	0	0	0	0	0	**0**
Solitary fibrous tumor NOS	14	5	5	0	0	1	0	0	0	**25**
Fat-forming (lipomatous) solitary fibrous tumour	0	0	0	0	0	0	0	0	0	**0**
Giant cell-rich solitary fibrous tumour	0	0	0	0	0	0	0	0	0	**0**
Inflammatory myofibroblastic tumour	2	0	2	2	0	0	0	0	1	**7**
Epithelioid inflammatory myofibroblastic sarcoma	0	0	0	0	0	0	0	0	0	**0**
Myofibroblastic sarcoma	3	1	2	0	0	0	0	0	0	**6**
Superficial CD34-positive fibroblastic tumor	0	0	0	0	0	0	0	0	0	**0**
Myxoinflammatory fibroblastic sarcoma	0	0	0	0	0	0	0	0	0	**0**
Infantile fibrosarcoma	0	0	0	0	0	0	0	0	0	**0**
Solitary fibrous tumor, malignant	1	0	0	0	0	1	0	0	0	**2**
Fibrosarcoma NOS	2	1	1	0	0	0	0	0	0	**4**
Myxofibrosarcoma	0	2	1	0	0	0	0	0	0	**3**
Epithelioid myxofibrosarcoma	0	0	0	0	0	0	0	0	0	**0**
Low-grade fibromyxoid sarcoma	1	0	0	0	0	0	0	0	0	**1**
Sclerosing epithelioid fibrosarcoma	0	1	0	0	0	0	0	0	0	**1**
Fibrohistiocytic	0	0	1	0	0	0	0	0	0	**1**
Plexiform fibrohistiocytic tumor	0	0	0	0	0	0	0	0	0	**0**
Giant cell tumour of soft parts NOS	0	0	1	0	0	0	0	0	0	**1**
Malignant tenosynovial giant cell tumour	0	0	0	0	0	0	0	0	0	**0**
Smooth muscle	6	10	8	6	0	5	32	1	0	**68**
Smooth muscle tumour of uncertain malignant potential	0	0	0	0	0	0	6	0	0	**6**
Leiomyosarcoma NOS	6	10	8	6	0	5	26	1	0	**62**
Skeletal muscle	19	6	3	0	2	1	0	0	0	**31**
Rhabdomyosarcoma	5	3	2	0	1	1	0	0	0	**12**
Rhabdomyosarcoma, "Embryonal-Alveolar"	0	1	0	0	0	0	0	0	0	**1**
Embryonal rhabdomyosarcoma NOS	9	0	1	0	1	0	0	0	0	**11**
Embryonal rhabdomyosarcoma, pleomorphic	0	0	0	0	0	0	0	0	0	**0**
Alveolar rhabdomyosarcoma	4	1	0	0	0	0	0	0	0	**5**
Pleomorphic rhabdomyosarcoma NOS	0	1	0	0	0	0	0	0	0	**1**
Spindle cell rhabdomyosarcoma	1	0	0	0	0	0	0	0	0	**1**
Congenital spindle cell rhabdomyosarcoma with VGLL2/NCOA2/CITED2 rearrangements	0	0	0	0	0	0	0	0	0	**0**
MYOD1-mutant spindle cell/sclerosing rhabdomyosarcoma	0	0	0	0	0	0	0	0	0	**0**
Intraosseous spindle cell rhabdomyosarcoma (with TFCP2/NCOA2 rearrangements)	0	0	0	0	0	0	0	0	0	**0**
Ectomesenchymoma	0	0	0	0	0	0	0	0	0	**0**

Table 4. Distribution of STTI and STS according to tumor site, Philippine General Hospital, 2014-2018 *(continued)*

Tumor Classification and Histologic Type	Tumor Site, *n*									Total
	Head and neck	Extremities	Trunk	Gastro-intestinal	Genito-urinary	Visceral retroperitoneal	Gyneco-logic	Breast	Lung, pleura, mediastinum	
Vascular	6	8	2	2	0	0	0	0	0	**18**
Hemangioendothelioma	2	1	0	0	0	0	0	0	0	**3**
Kaposiform hemangioendothelioma	1	0	0	0	0	0	0	0	0	**1**
Retiform haemangioendothelioma	0	0	0	0	0	0	0	0	0	**0**
Papillary intralymphatic angioendothelioma	0	0	0	0	0	0	0	0	0	**0**
Composite haemangioendothelioma	0	0	0	0	0	0	0	0	0	**0**
Neuroendocrine composite haemangioendothelioma	0	0	0	0	0	0	0	0	0	**0**
Kaposi sarcoma	1	0	0	1	0	0	0	0	0	**2**
Classic indolent Kaposi sarcoma	0	0	0	0	0	0	0	0	0	**0**
Endemic African Kaposi sarcoma	0	0	0	0	0	0	0	0	0	**0**
AIDS-associated Kaposi sarcoma	0	0	0	0	0	0	0	0	0	**0**
Iatrogenic Kaposi sarcoma	0	0	0	0	0	0	0	0	0	**0**
Pseudomyogenic (epithelioid sarcoma-like) haemangioendothelioma	0	0	0	0	0	0	0	0	0	**0**
Epithelioid haemangioendothelioma NOS	0	2	0	1	0	0	0	0	0	**3**
Epithelioid haemangioendothelioma with WWTR1-CAMTA1 fusion	0	0	0	0	0	0	0	0	0	**0**
Epithelioid haemangioendothelioma with YAP1-TFE3 fusion	0	0	0	0	0	0	0	0	0	**0**
Angiosarcoma	2	5	2	0	0	0	0	0	0	**9**
Tumors of peripheral nerves	11	24	15	0	0	3	0	0	1	**54**
Malignant peripheral nerve sheath tumour NOS	11	24	15	0	0	3	0	0	1	**54**
Malignant peripheral nerve sheath tumour, epithelioid	0	0	0	0	0	0	0	0	0	**0**
Melanotic malignant peripheral nerve sheath tumour	0	0	0	0	0	0	0	0	0	**0**
Granular cell tumour, malignant	0	0	0	0	0	0	0	0	0	**0**
Perineurioma, malignant	0	0	0	0	0	0	0	0	0	**0**
Chondro-osseous	2	1	0	0	0	0	0	0	0	**3**
Osteosarcoma, extraskeletal	2	1	0	0	0	0	0	0	0	**3**
Gastrointestinal stromal tumors	0	1	10	76	0	2	2	0	0	**91**
Gastrointestinal stromal tumor	0	1	10	76	0	2	2	0	0	**91**
Tumors of uncertain differentiation	15	34	8	1	0	1	1	1	0	**61**
Haemosiderotic fibrolipomatous tumor	0	0	0	0	0	0	0	0	0	**0**
Angiomyolipoma, epithelioid	0	0	0	0	0	0	0	0	0	**0**
Atypical fibroxanthoma	0	0	0	0	0	0	0	0	0	**0**
Angiomatoid fibrous histiocytoma	0	0	0	0	0	0	0	0	0	**0**
Ossifying fibromyxoid tumour NOS	0	0	0	0	0	0	0	0	0	**0**
Mixed tumour NOS	0	0	0	0	0	0	0	0	0	**0**
Mixed tumour, malignant, NOS	0	0	0	0	0	0	0	0	0	**0**
Myoepithelioma NOS	0	0	0	0	0	0	0	0	0	**0**
Phosphaturic mesenchymal tumour, malignant	0	0	0	0	0	0	0	0	0	**0**
NTRK-rearranged spindle cell neoplasm (emerging)	0	0	0	0	0	0	0	0	0	**0**
Synovial sarcoma NOS	7	19	5	0	0	0	0	0	0	**31**
Synovial sarcoma, spindle cell	0	0	0	0	0	0	0	0	0	**0**
Synovial sarcoma, biphasic	3	2	1	0	0	0	0	0	0	**6**
Synovial sarcoma, poorly differentiated	0	0	0	0	0	0	0	0	0	**0**
Epithelioid sarcoma	0	1	0	0	0	0	0	0	0	**1**
Proximal or large cell epithelioid sarcoma	0	0	0	0	0	0	0	0	0	**0**
Classic epithelioid sarcoma	0	0	0	0	0	0	0	0	0	**0**
Alveolar soft part sarcoma	1	2	0	0	0	0	0	0	0	**3**
Clear cell sarcoma NOS	0	1	0	0	0	0	0	0	0	**1**
Extraskeletal myxoid chondrosarcoma	0	0	0	0	0	0	0	0	0	**0**
Desmoplastic small round cell tumour	0	0	0	1	0	0	0	0	0	**1**
Rhabdoid tumour NOS	0	1	0	0	0	0	0	0	0	**1**
Perivascular epithelioid tumour, malignant	0	0	0	0	0	0	0	0	0	**0**
Intimal sarcoma	0	0	0	0	0	0	0	0	0	**0**
Ossifying fibromyxoid tumour, malignant	0	0	0	0	0	0	0	0	0	**0**
Myoepithelial carcinoma	0	0	0	0	0	0	0	0	0	**0**
Undifferentiated sarcoma	0	1	0	0	0	0	1	1	0	**3**
Spindle cell sarcoma, undifferentiated	0	0	0	0	0	0	0	0	0	**0**
Pleomorphic sarcoma, undifferentiated	4	7	2	0	0	1	0	0	0	**14**
Round cell sarcoma, undifferentiated	0	0	0	0	0	0	0	0	0	**0**
Undifferentiated small round cell sarcomas of bone and soft tissue	9	12	10	1	1	0	0	0	1	**34**
Ewing sarcoma	9	11	10	0	1	0	0	0	1	**32**
Round cell sarcoma with EWSR1-non-ETS fusions	0	0	0	0	0	0	0	0	0	**0**
C/C-rearranged sarcoma	0	1	0	1	0	0	0	0	0	**2**
Sarcoma with BCOR genetic alterations	0	0	0	0	0	0	0	0	0	**0**
Sarcoma, NOS	19	89	21	3	4	6	3	2	2	**149**
Total	**126**	**244**	**128**	**96**	**7**	**28**	**38**	**5**	**8**	**680**

CONCLUSION

We extensively reviewed all diagnosed, as well probable, STTI and STS in PGH, from January 1, 2014 to December 31, 2018, and made apparent the significant number of tumors that need further histopathologic evaluation for a definitive assessment. Sarcoma, NOS was the most common diagnosis rendered, followed by gastrointestinal stromal tumor and leiomyosarcoma. The median age in the study was found to be 47 years, with a slight female predominance (0.83 male to female ratio), both of which were different from published WHO data. STTI and STS were found to be most commonly located in the extremities, which is consistent with available literature.

This study addresses the lack of locoregional data pertaining to soft tissue tumors in the Philippines and Asia. The advent of improved ancillary diagnostic methods will pave the way to an improved STTI and STS database that will better reflect its true epidemiology.

RECOMMENDATIONS

The authors recommend that slide review and further immunohistochemistry and/or cytogenetic studies be performed to the excluded cases. We also recommend that additional support should be given to make ancillary tests more accessible to our patient population. Furthermore, the data is available for perusal to determine what additional ancillary tests are needed to improve our diagnostic capability as a teaching and tertiary referral hospital. A formal research may also be performed to determine the various factors involved in the nonfulfillment of recommended immunohistochemistry studies.

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STATEMENT OF AUTHORSHIP

Both authors certified fulfillment of ICMJE authorship criteria.

AUTHOR DISCLOSURE

Both authors declared no conflict of interest.

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APPENDICES

Appendix A. Data Collection Form

A Five-Year Review of Soft Tissue Sarcomas in a Tertiary Hospital: University of the Philippines – Philippine General Hospital
(Salise, JMM and Atun, JML)

ID Number: _____
Age: _____
Sex: _____

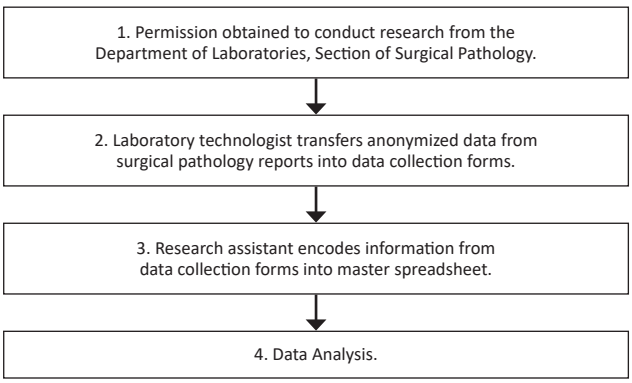
Tumor Site:

Final Histopathologic Diagnosis:

Appendix B. Master Spreadsheet

ID Number	Date (dd/mm/year)	Age	Sex	Tumor Site	Tumor Classification	Final Histopathologic Diagnosis

Appendix C. Diagrammatic Workflow



Appendix D. Coding Manual

Variable	Type	Code
ID Number	Field data	As is
Age	Field data	As is
Age group	Bracket code	0 = Pediatric (less than 18 years old) 1 = Young Adult (18-24 years old) 2 = Middle-aged Adult (25-44 years old) 3 = Older Adult (45-64 years old) 4 = Elderly (65 years old and above)
Sex	Listing code	0 = Male 1 = Female
Tumor site	Listing code	0 = Head and neck 1 = Extremities 2 = Trunk 3 = Gastrointestinal 4 = Genitourinary 5 = Visceral retroperitoneal 6 = Gynecologic 7 = Breast 8 = Lung, pleura, and mediastinum 9 = Other
Tumor classification	Listing code	0 = Adipocytic 1 = Fibroblastic/myofibroblastic 2 = Fibrohistiocytic 3 = Smooth muscle 4 = Pericytic (perivascular) 5 = Skeletal muscle 6 = Vascular 7 = Peripheral Nerve 8 = Chondro-osseous 9 = Gastrointestinal Stromal Tumors 10 = Tumors of uncertain differentiation **11 = Undifferentiated small round cell sarcomas of bone and soft tissue** 12 = Sarcoma, NOS 13 = Others
Tumor histologic type	Field data	As is