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Datasets for reporting of soft-tissue sarcoma: recommendations from the International Collaboration on Cancer Reporting (ICCR)

Aims: Soft-tissue tumours are rare and both accurate diagnosis and proper treatment represent a global challenge. Current treatment guidelines also recommend review by specialised pathologists. Here we report on international consensus-based datasets for the pathology reporting of biopsy and resection specimens of soft-tissue sarcomas. The datasets were produced under the auspices of the International Collaboration on Cancer Reporting (ICCR), a global alliance of international pathology and cancer organisations.

Methods and results: According to the ICCR's guidelines for dataset development, an international expert panel consisting of pathologists, a surgical oncologist, and a medical oncologist produced a set of core and noncore data items for biopsy and resection specimens based on a critical review and discussion of current evidence. All professionals involved were

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subspecialised soft-tissue sarcoma experts and affiliated with tertiary referral centres. Commentary was provided for each data item to explain the rationale for selecting it as a core or noncore element, its clinical relevance, and to highlight potential areas of disagreement or lack of evidence, in which case a consensus position was formulated. Following international public consultation, the documents were finalised and ratified, and the datasets, which included a synoptic reporting guide, were published on the ICCR website.

Conclusion: These first international datasets for soft-tissue sarcomas are aimed to promote high-quality, standardised pathology reporting. Their adoption will improve consistency of reporting, facilitate multidisciplinary communication, and enhance comparability of data, all of which will help to improve patient's management.

Keywords: biopsy, checklist, dataset, guidelines, ICCR, resection, soft-tissue sarcoma, synoptic report

Introduction

Soft-tissue sarcomas represent a heterogeneous group of malignancies, the diagnosis of which represents a global challenge.[1-3] Pathology reporting on sarcoma biopsy and resection specimens provides information that is essential to the management of patients, is used for clinical trials and tissue-based research, and is recorded in cancer registries. The relevance of accurate reporting is also underlined within current clinical guidelines.[4] Given this central role of pathology data in oncology care at both the individual and population level, standardised and structured pathology reporting is essential to ensure that relevant information is complete, unambiguous, and delivered in a user-friendly format. Currently, datasets for pathology reporting on soft-tissue sarcomas are somewhat limited.[5-8]

The International Collaboration on Cancer Reporting (ICCR) coordinates the production of evidence-based international pathology reporting datasets that have a consistent style and contain all of the parameters needed to guide patient management. The ICCR is a collaboration of multiple pathology organisations, and has alliances with international cancer organisations, including the International Agency for Research on Cancer (IARC), Union for International Cancer Control (UICC), and American Joint Committee on Cancer (AJCC). The ICCR datasets are freely available from the ICCR website (www.iccr-cancer.org/datasets).

Here we report on the development of the datasets for pathology reporting on soft-tissue sarcomas biopsy and resection specimens,[9,10] discuss the rationale for the inclusion of data items, and propose a consensus position in areas of controversy and where there is limited evidence to assist pathologists in their diagnostic practice.

Materials and Methods

In accordance with the ICCR guidelines for the development of cancer datasets, the Dataset Steering Committee (DSC) appointed a Series Champion (CDMF) and a Chair (ADT). The responsibility of the former was to coordinate the development of a series of datasets for bone and soft tissue and ensure harmonisation across datasets, and the Chair oversaw the development of the datasets for soft-tissue sarcoma. Together, they identified 11 other expert sarcoma pathologists who, together with the Chair, two clinicians, and Project Manager (FW), formed the Dataset Authoring Committee (DAC). The expert panel included pathologists from the USA (MH, LAD, SMD), the UK (KT), Europe (AA, JB, BLA), Canada (BD), New Zealand (CH), Japan (AY), and China (JW) as well as a sarcoma surgical oncologist (AG, Italy) and a sarcoma medical oncologist (AW, USA). In line with other ICCR datasets, the soft-tissue sarcoma datasets included a number of elements, categorised as core or noncore, with a reporting guide accompanied by a commentary for each element. Two distinctive documents were generated, focusing on biopsy and resection specimens, respectively. Core elements were determined on the basis of whether they were considered to be essential for clinical management, staging, or prognosis, and whether they had evidentiary support at Level III-2 or above (based on prognostic factors in the National Health and Medical Research Council levels of evidence[11]). In the absence of such evidence, an element was considered to be core if there was unanimous agreement by the DAC. Noncore elements were elements categorised as lacking Level III-2 evidence but unanimously considered to be clinically important and part of good practice, albeit not yet sufficiently validated or regularly used in patient management. The initial working draft of

the datasets were developed by the Project Manager on the basis of a review of all published, relevant pathology datasets and guidelines. Following editing by the Chair, the drafts datasets were circulated to the DAC and discussed in a series of teleconferences. On the basis of these discussions, the Chair edited the datasets and recirculated them to the DAC for further review via e-mail communications until consensus was reached. The datasets were posted on the ICCR website for open international consultation for a period of 8 weeks. The datasets were reviewed in response to feedback received, approved by the DAC, and ratified by the DSC.

Results

SCOPE

These ICCR datasets have been developed for the pathology reporting of biopsy and resection specimens for soft-tissue sarcomas. Adult rhabdomyosarcoma is also included in these datasets. Some soft-tissue tumours rarely arise primarily in bone and in this case should be reported using the ICCR primary tumour in bone datasets.[12,13]

Lymphoma, uterine sarcoma, paediatric rhabdomyosarcoma, and metastases are excluded from these datasets. Gastrointestinal Stromal Tumour (GIST) are also not included in these datasets, as GIST displays a number of unique features that warrant separate consideration; separate ICCR datasets for GIST are available.[14,15]

CORE ELEMENTS

The summation of all core elements is considered to be the minimum reporting standard for a specific cancer. A summary of the core elements for both biopsy and resection specimens is outlined in Tables 1 and 2, respectively, and each is described in further detail below. To avoid repetitions, this article will mostly refer to resection specimens. Issues related to biopsy specimens will be addressed whenever necessary.

NEOADJUVANT THERAPY

Neoadjuvant therapy may have a profound effect on the morphology of the tumour. In particular, knowledge of such prior therapy may help to interpret morphologic changes occurring in the resection specimen such as tumour differentiation, necrosis, vasculature changes, cellular atypia, and the presence of inflammatory cells. For this reason, information about any previous therapy is important for the accurate assessment of soft-tissue tumour specimens.

Table 1. Core and noncore elements for the pathology reporting of soft-tissue sarcoma – biopsy specimens

CORE	Noncore
Operative procedure	Clinical information
Tumour site	Lymphovascular invasion
Histological tumour type	Coexistent pathology
Histological tumour grade	
Mitotic count	
Necrosis	
Ancillary studies	

OPERATIVE PROCEDURE

It is important that the type and intent of the operative procedure is clearly stated by the surgeon, as this impacts accurate pathologic assessment.

TUMOUR SITE

Primary anatomic site is an important prognostic parameter. The anatomic location often impacts the risk of aggressive behaviour. As an example, atypical lipomatous tumour/well-differentiated liposarcoma arising superficially has a risk of local recurrence around 10%, whereas when occurring in the retroperitoneum the risk approaches 80%. The anatomic location may also define some specific entities.

TUMOUR DEPTH: TISSUE PLANE

Depth is also important. For example, the risk of distant spread of leiomyosarcoma varies from virtually 0% for purely dermal lesions to ~50% for deep-seated tumours. For this reason, it is critical to specify anatomic location and depth with regard to the fascia as accurately as possible and to mention the presence or absence of fascial involvement in epifascial tumours.

The ‘not known’ designation may be necessary if the tumour is excised without any surrounding normal tissue or in the absence of any information from the surgeon.

TUMOUR DIMENSIONS

Maximum tumour dimension is core, although annotation of additional dimensions is regarded as a

Table 2. Core and noncore elements for the pathology reporting of soft-tissue sarcoma – resection specimens

Core	Noncore
Neoadjuvant therapy	Clinical information
Operative procedure	Tumour dimensions • Additional dimensions
Tumour site	Lymphovascular invasion
Tumour depth - tissue plane	Margin status • Not involved • Specify distance to other margin(s), if relevant
Tumour dimensions • Largest diameter	Coexistent pathology
Histological tumour type	Pathological staging
Histological tumour grade	
Mitotic count	
Necrosis	
Response to neoadjuvant therapy	
Margin status • R0 • R1 • R2 • Distance to and localisation of closest margin	
Lymph node status	
Ancillary studies	
Histologically confirmed metastases	

noncore feature (Table 2). Tumour size is a critical parameter for assessment of the risk of malignant behaviour in selected histotypes such as solitary fibrous tumour.[6] Size is also part of some staging systems if/when used.

HISTOLOGICAL TUMOUR TYPE

Histological diagnosis is based on the 2020 World Health Organization (WHO) Classification of Soft Tissue and Bone Tumours, 5th edition (see Table 3).[16] The WHO classification is based on microscopic morphologic findings, variably combined with immunohistochemical and/or molecular findings.[16] If further testing is not available, then the possible diagnostic options should be described. The histopathologic report should include the supporting ancillary testing if performed.

The most up-to-date ICD-O codes are available at http://www.iacr.com.fr/index.php?option=com_content&view=article&id=149:icd-o-3-2&catid=80&Itemid=545.[17]

HISTOLOGICAL TUMOUR GRADE

Histologic tumour grade offers important prognostic information. While several different grading systems exist, the French Federation of Cancer Centers Sarcoma Group System (FNCLCC) grading system is the most widely used (see Table 4).[18] This system is based on the assessment of differentiation, mitotic count, and necrosis. Importantly, the system only applies to specific histotypes (see Table 5). Many other histotypes are not gradable. Reliable tumour grading is not possible after neoadjuvant therapy.

MITOTIC COUNT

Mitotic count is a key parameter for histologic grading of malignancy, as well as a factor used in risk assessment schemes. The mitotic count should be determined in the most mitotic area of the tumour. The mitotic count should be reported per 2 mm^2. Ten high-power fields (HPF) approximates to 2 mm^2 on most modern microscopes, but the number of fields to be counted to encompass 2 mm^2 should ideally be calculated on individual microscopes.

NECROSIS

Necrosis is a key parameter for histologic grading of malignancy. As the French grading system[18] is only applicable to untreated tumours, assessment of necrosis following neoadjuvant treatment should not be performed. True coagulative necrosis (with neutrophil polymorphs and cellular debris) should be distinguished from stromal hyalinisation or infarction/ischemic-type necrosis.

RESPONSE TO NEOADJUVANT THERAPY

Neoadjuvant systemic and/or local treatment of soft-tissue sarcomas is gradually entering into clinical practice and is therefore regarded as a core element.[19] Descriptive assessment of the amount of residual viable tumour and type of histologic response may represent valuable information in terms of estimation of the efficacy of treatment. Correlation of microscopic features with macroscopic findings is critical. A scientific publication from the

Table 3. World Health Organization classification of soft-tissue tumours[16]

Descriptor	ICD-O codes[a]
Adipocytic tumours	
Intermediate (locally aggressive)	
Atypical lipomatous tumour	8850/1
Malignant	
Liposarcoma, well-differentiated, not otherwise specified (NOS)	8851/3
Lipoma-like liposarcoma	8851/3
Inflammatory liposarcoma	8851/3
Sclerosing liposarcoma	8851/3
Dedifferentiated liposarcoma	8858/3
Myxoid liposarcoma	8852/3
Pleomorphic liposarcoma	8854/3
Epithelioid liposarcoma	
Myxoid pleomorphic liposarcoma	8859/3*
Fibroblastic and myofibroblastic tumours	
Intermediate (rarely metastasizing)	
Dermatofibrosarcoma protuberans NOS	8832/1
Pigmented dermatofibrosarcoma protuberans	8833/1
Dermatofibrosarcoma protuberans, fibrosarcomatous	8832/3
Myxoid dermatofibrosarcoma protuberans	
Dermatofibrosarcoma protuberans with myoid differentiation	
Plaque-like dermatofibrosarcoma protuberans	
Solitary fibrous tumour NOS	8815/1
Fat-forming (lipomatous) solitary fibrous tumour	
Giant cell–rich solitary fibrous tumour	
Inflammatory myofibroblastic tumour	8825/1
Epithelioid inflammatory myofibroblastic sarcoma	
Myofibroblastic sarcoma	8825/3
Superficial CD34-positive fibroblastic tumour	8810/1
Myxoinflammatory fibroblastic sarcoma	8811/1
Infantile fibrosarcoma	8814/3
Malignant	
Solitary fibrous tumour, malignant	8815/3
Fibrosarcoma NOS	8810/3
Myxofibrosarcoma	8811/3
Epithelioid myxofibrosarcoma	
Low-grade fibromyxoid sarcoma	8840/3
Sclerosing epithelioid fibrosarcoma	8840/3
So-called fibrohistiocytic tumours	
Intermediate (rarely metastasizing)	
Plexiform fibrohistiocytic tumour	8835/1
Giant cell tumour of soft parts	9251/1
Malignant	
Malignant tenosynovial giant cell tumour	9252/3
Vascular tumours	
Intermediate (rarely metastasizing)	
Retiform haemangioendothelioma	9136/1
Papillary intralymphatic angioendothelioma	9135/1
Composite haemangioendothelioma	9136/1
Neuroendocrine composite haemangioendothelioma	
Kaposi sarcoma	9140/3
Classic indolent Kaposi sarcoma	
Endemic African Kaposi sarcoma	
AIDS-associated Kaposi sarcoma	
Iatrogenic Kaposi sarcoma	
Pseudomyogenic (epithelioid sarcoma–like) haemangioendothelioma	9138/1
Malignant	
Epithelioid haemangioendothelioma NOS	9133/3
Epithelioid haemangioendothelioma with *WWTR1-CAMTA1* fusion	
Epithelioid haemangioendothelioma with *YAP1-TFE3* fusion	
Angiosarcoma	9120/3

Table 3. (*Continued*)

Descriptor	ICD-O codes[a]
Pericytic (perivascular) tumours	
Malignant	
Glomus tumour, malignant	8711/3
Smooth muscle tumours	
Malignant	
Leiomyosarcoma NOS	8890/3
Skeletal muscle tumours	
Malignant	
Embryonal rhabdomyosarcoma NOS	8910/3
Embryonal rhabdomyosarcoma, pleomorphic	8910/3
Alveolar rhabdomyosarcoma	8920/3
Pleomorphic rhabdomyosarcoma NOS	8901/3
Spindle cell rhabdomyosarcoma	8912/3
Congenital spindle cell rhabdomyosarcoma with *VGLL2/NCOA2/CITED2* rearrangements	
MYOD1-mutant spindle cell/sclerosing rhabdomyosarcoma	
Intraosseous spindle cell rhabdomyosarcoma (with *TFCP2/NCOA2* rearrangements)	
Ectomesenchymoma	8921/3
Chondro-osseous tumours	
Malignant	
Osteosarcoma, extraskeletal	9180/3
Peripheral nerve sheath tumours	
Malignant	
Malignant peripheral nerve sheath tumour NOS	9540/3
Malignant peripheral nerve sheath tumour, epithelioid	9542/3
Malignant melanotic nerve sheath tumour	9540/3
Granular cell tumour, malignant	9580/3
Tumours of uncertain differentiation	
Intermediate (rarely metastasizing)	
Atypical fibroxanthoma	8830/1
Angiomatoid fibrous histiocytoma	8836/1

Table 3. (*Continued*)

Descriptor	ICD-O codes[a]
Ossifying fibromyxoid tumour NOS	8842/0
Mixed tumour NOS	8940/0
Mixed tumour, malignant, NOS	8940/3
Myoepithelioma NOS	8982/0
Malignant	
Phosphaturic mesenchymal tumour, malignant	8990/3
NTRK-rearranged spindle cell neoplasms (emerging entity)	
Synovial sarcoma NOS	9040/3
Synovial sarcoma, spindle cell	9041/3
Synovial sarcoma, biphasic	9043/3
Synovial sarcoma, poorly differentiated	
Epithelioid sarcoma	8804/3
Proximal or large cell epithelioid sarcoma	
Classic epithelioid sarcoma	
Alveolar soft part sarcoma	9581/3
Clear cell sarcoma of soft-tissue	9044/3
Extraskeletal myxoid chondrosarcoma	9231/3
Desmoplastic small round cell tumour	8806/3
Rhabdoid tumour of soft-tissue	8963/3
Perivascular epithelioid tumour, malignant	8714/3
Intimal sarcoma	9137/3
Ossifying fibromyxoid tumour, malignant	8842/3
Myoepithelial carcinoma	8982/3
Undifferentiated sarcoma	8805/3
Spindle cell sarcoma, undifferentiated	8801/3
Pleomorphic sarcoma, undifferentiated	8802/3
Round cell sarcoma, undifferentiated	8803/3
Undifferentiated small round cell sarcomas of bone and soft-tissue	
Ewing sarcoma	9364/3
Round cell sarcoma with *EWSR1*–nonETS fusions	9366/3*
CIC-rearranged sarcoma	9367/3*

Table 3. (*Continued*)

Descriptor	ICD-O codes[a]
Sarcoma with *BCOR* genetic alterations	9368/3*

[a]These morphology codes are from the International Classification of Diseases for Oncology, third edition, second revision (ICD-O-3.2).[17] Behaviour is coded /0 for benign tumours; /1 for unspecified, borderline, or uncertain behaviour; /2 for carcinoma in situ and grade III intraepithelial neoplasia; /3 for malignant tumours, primary site; and /6 for malignant tumours, metastatic site.

*Codes marked with an asterisk were approved by the International Agency for Research on Cancer /WHO Committee for ICD-O at its meeting in January 2020. Incorporates all relevant changes from the 5th Edition Corrigenda October 2020.

European Organization for Research and Treatment of Cancer (EORTC) suggests that response should be evaluated microscopically on at least one complete central slide of tumour through its largest dimension.[20]

MARGIN STATUS

Most features relating to margin status are core, although there is one noncore feature (Table 2). The status of the resection margins directly impacts patient outcome. However, there is no generally accepted way of reporting margins for soft-tissue tumours. If margins are involved, a distinction is often made between microscopic involvement (R1) and resections in which it is evident macroscopically that the tumour is incompletely resected (R2). In the case of negative margins (R0), the minimum that should be documented is the distance of tumour to the closest margins. The type of tissue comprising the resection margin should also be recorded, since it might be that specific tissue types (e.g. fascia) are more robust marginal tissues than others. In some cases, margin status cannot be assessed; for example, in liposarcomas in the retroperitoneum, or in the case of debulking, piecemeal excision, or tumour rupture, in which assessment of margins is not feasible. Correlation with the surgical findings is critical to ensure accurate reporting.

LYMPH NODE STATUS

Regional lymph node metastasis is uncommon in adult soft-tissue sarcomas. However, there are a few exceptions; for example, epithelioid sarcoma and clear-cell sarcoma of soft parts. Lymph nodes are not sampled routinely in soft-tissue resections, and it is not necessary to undertake an exhaustive search for nodes. However, when present, regional lymph node metastasis has prognostic importance and should be reported.

Table 4. Tumour differentiation score according to histologic type in the updated version of the French Federation of Cancer Centers Sarcoma Group System[18]

Histologic type	Score
Atypical lipomatous tumour/Well-differentiated liposarcoma	1
Well-differentiated leiomyosarcoma	1
Malignant neurofibroma	1
Well-differentiated fibrosarcoma	1
Myxoid liposarcoma	2
Conventional leiomyosarcoma	2
Conventional fibrosarcoma	2
Myxofibrosarcoma	2
High-grade myxoid (round cell) liposarcoma	3
Pleomorphic liposarcoma	3
Dedifferentiated liposarcoma	3
Pleomorphic rhabdomyosarcoma	3
Poorly differentiated/pleomorphic leiomyosarcoma	3
Biphasic/monophasic/poorly differentiated Synovial sarcoma	3
Mesenchymal chondrosarcoma	3
Extraskeletal osteosarcoma	3
Extraskeletal Ewing sarcoma	3
Malignant rhabdoid tumour	3
Undifferentiated pleomorphic sarcoma	3
Undifferentiated sarcoma, not otherwise specified	3

ANCILLARY STUDIES

All immunohistochemical staining and molecular tests that contributed to the diagnosis should be documented. This includes molecular testing performed on histological tumour types that are defined by specific genetic aberrations (i.e. *CIC*-rearranged sarcomas).

Table 5. Guidelines for grading soft-tissue sarcomas

Tumours which are by definition high grade • Ewing sarcoma • Rhabdomyosarcoma (all types) • Angiosarcoma • Pleomorphic liposarcoma • Soft tissue osteosarcoma • Mesenchymal chondrosarcoma • Desmoplastic small cell tumour • Extra-renal rhabdoid tumour • Intimal sarcoma	Tumours of varying behaviour for which grading or tumour-specific risk assessment may be prognostically useful • Myxoid liposarcoma • Leiomyosarcoma • Malignant peripheral nerve sheath tumour • Solitary fibrous tumour • Myxofibrosarcoma • Dedifferentiated liposarcoma[a]
Tumours which are by definition low grade Well differentiated liposarcoma/atypical lipomatous tumour Dermatofibrosarcoma protuberans[b] Infantile fibrosarcoma	Tumours of varying behaviour for which grading parameters are not yet well defined Epithelioid hemangioendothelioma Extraskeletal myxoid chondrosarcoma
Tumours which are not gradable but which often metastasize within 10–20 years of follow-up • Alveolar soft part sarcoma • Clear cell sarcoma • Epithelioid sarcoma • Synovial sarcoma[a] • 'Low-grade' fibromyxoid sarcoma • Sclerosing epithelioid fibrosarcoma	

Modified by Professor Christopher Fletcher. The original source for this information is Recommendations for the reporting of soft-tissue sarcomas. Association of Directors of Anatomic and Surgical Pathology. *Mod Pathol* 1998 Dec;11 (12):1257–61.[5]

[a]Some studies have shown prognostic difference between Grades 2 and 3 using the French grading system.

[b]Fibrosarcomatous Dermatofibrosarcoma Protuberans (DFSP) is usually regarded as intermediate grade.

HISTOLOGICALLY CONFIRMED DISTANT METASTASES

The presence of distant metastases strongly influences the outcome. The pattern of metastatic spread of soft-tissue sarcomas often depends on the specific histologic type. For example, metastatic spread to the lungs is very common in leiomyosarcoma, whereas myxoid liposarcoma can spread to soft-tissues and bone without involving the lungs.

NONCORE ELEMENTS

Noncore elements are those which were unanimously agreed by the committee to be included in the datasets but are not supported by level III-2 evidence. A summary of the noncore elements for both biopsy and resection specimens is outlined in Tables 1 and 2, respectively, and each is described in further detail below.

CLINICAL INFORMATION

It is the responsibility of the clinician requesting the pathological examination of a specimen to provide information that will have an impact on the diagnostic process or affect its interpretation. The use of a standard pathology requisition/request form including a checklist of important clinical information is strongly encouraged to help ensure that important clinical data is provided by the clinician with the specimen.

It is the responsibility of the pathologist to verify that all clinical information necessary for an accurate diagnosis is available to ensure that diagnosis is made within the appropriate clinical/imaging context. This can often be achieved through discussion at a multidisciplinary tumour board meeting.

As an example, the coexistence of systemic disorders such as immunosuppression, which would be relevant in the evaluation of specific lesions such as Epstein–Barr virus (EBV)-related smooth muscle neoplasms, and Kaposi sarcoma, should be reported.

TUMOUR DIMENSIONS

Reporting of additional dimensions other than maximum tumour dimension is considered noncore (Table 2).

LYMPHOVASCULAR INVASION

Evaluation of lymphovascular invasion has emerged as a potential prognostic parameter; however, it is not yet widely adopted.[21,22]

MARGIN STATUS

Most features relating to margin status are core, although there is a noncore feature represented by indication of the distance from additional margins other than the closest margin. (Table 2).

COEXISTENT PATHOLOGY

Pathologists should report other microscopically identifiable abnormalities that are relevant to the diagnosis. For example, the presence of precursor

lesions in malignant peripheral nerve sheath tumours (MPNSTs).

PATHOLOGICAL STAGING

Pathological staging is frequently not applicable or useful in most sarcoma types and has therefore been included in the resection dataset as a noncore element. However, staging is required in many existing reporting systems (UICC[23] or AJCC[24] 8th edition staging systems), and in many cancer centres around the world it is mandated or used as a quality assurance indicator. Staging may also be required per local/institutional preference.

Discussion

Proper therapeutic planning of soft-tissue sarcomas requires accurate classification. In consideration of both the rarity and intrinsic diagnostic complexity, published data indicate a rate of diagnostic inaccuracy that varies between 15 and 30% of cases.[1-3] Availability of structured pathology reporting may play an important role in improving the quality of the diagnostic process by ensuring better multidisciplinary communication. Moreover, more accurate data extraction by cancer registries allows more precise epidemiologic analyses. Here we describe the development of the first internationally agreed datasets for reporting on both biopsy and resection specimens of soft-tissue sarcomas. To promote widespread uptake with the aim of improving the quality of soft-tissue sarcoma reporting globally, the datasets and structured reporting templates are freely available at the ICCR website.

Interestingly, the process of developing the datasets revealed substantial agreement among DAC members. Unfortunately, on a global scale most soft-tissue sarcomas are still diagnosed and treated initially at nonexpert centres. The adoption of a standardised reporting scheme does not represent a mere formal advance. As an example, the recommendation of adopting on a global scale the most recent WHO classification certainly contributes to significant improvement of the quality of a pathologic diagnosis. Similarly, a clear indication regarding a proper use of the FNCLCC grading system may prove beneficial to soft-tissue sarcoma prognostication and the therapeutic decision process.

We are aware that the use of standardised reporting templates is time-consuming and therefore may not be supported by practicing pathologists who may prefer a less rigid approach to diagnosis. However, it is broadly accepted that structured pathology reporting ensures a more complete diagnosis and, as a consequence, improved treatment decisions and patient outcomes.[25-27] Moreover, in consideration of the fast evolution of artificial intelligence (AI) protocols, structured standardised reporting would undoubtedly facilitate future large-scale AI-driven studies.

In conclusion, we here propose two internationally agreed datasets for standardised reporting in soft-tissue sarcomas aimed to improve diagnosis, treatment, and outcome and to facilitate future AI-based approaches for these rare malignancies.

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Conflict of interest

The authors report no relevant conflicts of interest.

Author contributions

APDT wrote the initial draft article with final review and revision by FW, AA, JB, BD, LD, SD, AG, MH, CH, BL, KT, AW, JW, AY, and CF.

Data availability statement

Data sharing is not applicable to this article as no new data were created or analysed in this study.

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