

Tumour Review



SELNET clinical practice guidelines for soft tissue sarcoma and GIST

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Introduction

Soft tissue sarcoma (STS) is a heterogeneous group of neoplasms, encompassing > 80 different histologic subtypes. Approximately three

quarter of sarcoma arise from soft-tissue, about 15% are gastrointestinal stromal tumours (GISTs) and bone sarcoma represent the remaining 10%. The current guidelines will focus on soft-tissue and GIST, excluding Kaposi sarcoma and non-pleomorphic rhabdomyosarcoma.

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Bone sarcomas are covered in a different paper.

General statements

- Management of soft tissue, visceral, and bone sarcoma should be carried out within multidisciplinary reference centres for sarcoma [III, A] [1]. Multidisciplinary tumour boards (MDTB) should include at least the following specialties: medical oncology, paediatrics (if paediatric patients are discussed), radiology, surgery, pathology and radiation oncology.
- A MDTB cannot be defined only by the volume of patients followed, but also by the periodicity of meeting (weekly MDTB is recommended), its contribution to clinical trials and scientific production and its participation in national or international guidelines. These MDTB should ideally be periodically audited to ensure quality.
- All diagnostic procedures and therapeutic decisions should be discussed within a MDTB.
- Several reports indicate better clinical results and better cost-effectiveness if sarcoma or presumptive sarcoma patients are managed in sarcoma reference centres with MDTB discussion [III, A] [2–5].

Soft tissue sarcoma

Incidence

Soft tissue sarcomas are rare tumours, with an estimated incidence of approximately 9 new cases/100,000 inhabitants/ year in Europe [6]. Incidence in other areas, such as Latin-American countries is difficult to estimate due to the lack of registries [7,8].

Diagnosis and pathology/molecular biology

All diagnostic procedures in patients with suspicion of soft-tissue sarcoma should be discussed within a multidisciplinary tumour board (MDTB).

During the diagnostic course, in patients with superficial lesions > 5 cm and deep lesions of any size, imaging and biopsy before surgery are strongly recommended. For primary tumours of the limb, trunk wall and pelvis, MRI is the preferred recommended imaging test. CT scan is recommended for any other site, or as a MRI alternative [III, A]. A core needle biopsy is recommended for the diagnosis of soft tissue or visceral lesions > 3 cm [III, A]. An adequate procedure to perform biopsies should include imaging guidance to avoid any suspected area of necrosis, use of G14 or G16 needles with coaxial introducer for a single skin entrance, and 4 to 6 cores varying the angle into the tumour [III, A]. Pathological diagnosis should be made according to the most recent WHO classification and histological grading should be based on the FNCLCC system [III, A]. Central pathological review by an expert sarcoma pathologist is strongly recommended [III, A]. Cases should be referred to molecular pathology tests whenever morphology and immunohistochemistry are not enough for a precise diagnosis and/or when additional prognostic/predictive information is required [III, A]. Grade should be established always prior to treatment based on the core biopsy. When neoadjuvant treatment is administered, pathological findings should be quantified and reported in terms of residual viable (stainable) tumour cells and their mitotic index, and percentage of post-treatment changes (necrosis, sclerothyalinosis, fibrosis, fibrohistiocytic reaction, haemorrhage). Percentage of hypercellular/round cell component and adipocytic maturation should be noted in case of myxoid liposarcoma [9].

Staging and risk assessment

Imaging studies to evaluate the presence of distant metastasis are mandatory. To assess the presence of lung metastases, a chest CT scan is

recommended [III, A]. An abdominal and pelvic CT scan is recommended to rule out metastasis in special histologic subtypes with high metastatic potential (myxoid liposarcoma, epithelioid sarcoma, angiosarcoma, leiomyosarcoma, small-cell sarcomas) [III, A] [10]. Currently, spine and pelvic MRI is preferred in myxoid liposarcoma [IV, A], and a baseline brain MRI should be considered in alveolar soft-part sarcoma (ASPS), angiosarcoma and clear cell sarcoma [IV, A] due to their high risk of central nervous system spread. PET/CT scan and/or bone scintigraphy are optional and are advised in case of equivocal images and/or clinical bone involvement suspicion.

Risk stratification is assessed using composite tools which may vary according to histological subtype after central review, grade, primary site (see GIST section), tumour size and presence of metastasis [IV, A]. Nomograms are available for several locations [11–13] and those with reported validation studies (retroperitoneal and limb soft tissue sarcomas) should be used.

Management of local disease

For patients with an adult type localized STS, surgery is the standard treatment. This procedure must be performed by a surgeon, specifically trained for the treatment of this group of diseases [1]. Surgery should always be preceded by an expert sarcoma MDTB discussion. The standard surgical procedure is a wide excision (*en bloc* resection) with negative margins (R0) [II, A] [14] and limb salvage procedure whenever feasible. In some special situations, reconstructive surgery should be taken into account and plastic surgery can facilitate the reconstruction of wide soft-tissue sarcoma surgeries. When despite of neo- or adjuvant treatments the achievement of an adequate margin with a functional limb is not feasible, amputation should be considered and discussed in a specialized MDTB [III, A] [14]. Pathologically confirmed or clinically evident lymph nodes should be resected but elective node dissection is not recommended. Adjuvant RT or chemotherapy (ChT) do not compensate for an improper first or second surgery. Re-excision by an expert team should be discussed in a MDTB in this situation, especially when surgery was performed outside a reference centre [III, A]. Local re-staging has to be performed in order to plan an adequate re-excision. Postoperative hematoma is considered a tumour contamination and must be included in the surgical tumour bed of re-excision. In the case of R2 surgery (macroscopic residual tumour after surgery), re-operation is mandatory, and preoperative treatments should be considered when adequate oncology margins cannot be achieved, depending on the histological subtype. Re-excision should be discussed when the oncological margins are not satisfactory even after planned surgeries. However, if it is impossible to obtain a greater or better margin, due to its anatomical location, radiotherapy (RT) should be considered. Marginal resections with microscopically positive margins (R1) may be appropriate for extracompartmental atypical lipomatous tumours. Wide excision procedure is followed by RT as the standard treatment in cases with at least one of the following risk factors: high-grade (G2-3), deep, >5 cm lesions [II, A] [15–17]. Exception may be made after MDTB discussions considering site and comorbidities [II, A] [16]. RT may be avoided for G1, R0, <5cm, superficial tumours of the limbs and trunk wall [IV, B]. In cases of G1, > 5 cm and deep tumours, RT should be validated with a MDTB [18]. Preoperative or postoperative RT are equally acceptable with different side-effect profile in a mid and long-term [II, A] [19]. In some locations (e.g. head and neck), postoperative RT is preferred. As for surgery, preoperative RT should always be discussed on MDTB [18]. The time frame between end of preoperative RT and surgery or surgery and the initiation of adjuvant RT should be 4–6 weeks, though longer intervals may be needed in case of clinical constraints (delayed wound healing) [IV, D] [20,21].

Adjuvant ChT is not a standard treatment and is not recommended in chemotherapy non-responsive histologic subtypes (for example, ASPS, clear cell sarcoma, well/dedifferentiated liposarcoma) [22]. There are conflicting results in literature regarding its value, mainly in relation to

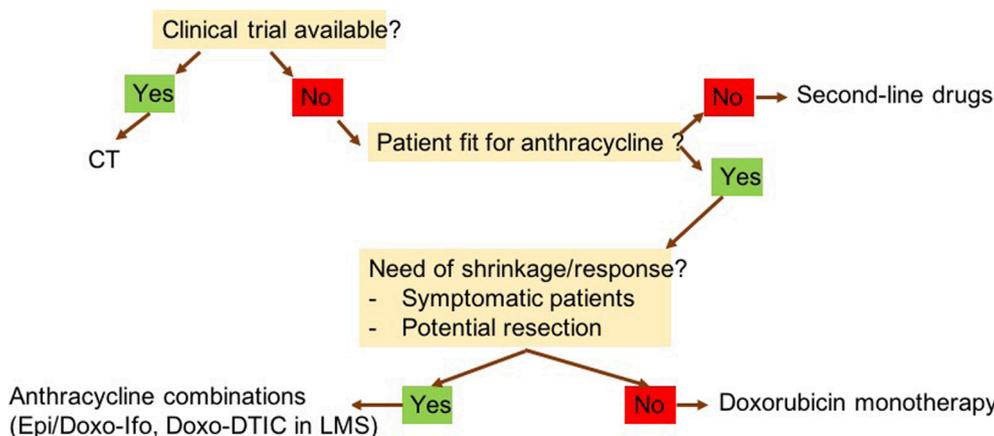


Fig. 1. Algorithm for selection of first line therapy in advanced STS CT: clinical trial; Epi: epirubicin; Doxo: doxorubicin; Ifo: ifosfamide.

the poor selection of high-risk patients and inadequate use of dose intensity in the administered regimens. The application of validated nomograms in a negative large randomized trial evaluating the role of adjuvant ChT [23], virtually converted it into a positive study, showing a significant benefit in disease-free survival and overall survival (OS) in the high-risk population [24].

Those randomized trials selecting high-risk localized limb or trunk-wall STS with the highest dose intensity of the two most active drugs (anthracyclines and ifosfamide) consistently showed a 5-y OS above 70% [22,25,26]. A meta-analysis that incorporated comparative trials with these drugs reported statistically significant survival benefit favouring ChT arm. Yet, this meta-analysis was not based on individual data [27].

Perioperative ChT (preferably neoadjuvant) should be considered in the context of patients with high-risk localized STS of limbs and trunk-wall [II, A] [22,25,28,29]. Tumours > 5 cm, G3 and deep located have been used as high-risk population criteria. However, high-risk could be more precisely defined by validated nomograms as death risk higher than 40% [26]. The combination of anthracycline and ifosfamide at full doses with G-CSF and MESNA support is the recommended scheme being three cycles as effective as five in a randomized trial [II, A] [22]. Further randomized clinical trials evaluating the role of perioperative ChT are needed, and patient participation is strongly encouraged.

Management of advanced/metastatic disease

The presence of distant metastasis is a poor prognostic factor for OS, ranging currently 18–20 months [30,31]. However, a fraction of patients with advanced sarcoma could benefit from long term remission, especially those reaching a complete response and a smaller percentage of those obtaining partial response after first line of treatment for advanced disease [32].

Supportive care and quality of life evaluation should be included in the early management of all patients with advanced sarcoma [33]. When complete excision of all lesions is feasible, surgery can be a preferable treatment option for metachronous (disease-free interval ≥ 1 year) metastatic appearance when the number of nodes is limited (i.e. 3–5) and without extrapulmonary disease [IV, B]. This strategy could also be offered to patients with oligometastatic disease located at others sites (liver, soft tissue) [V, B] [34], after discussion in MDTB. In selected cases, stereotactic radiotherapy might also be recommended in this setting after discussion in MDTB [IV, C] [35].

First-line standard ChT treatment is based on anthracyclines [I, A]. In particular subtypes, with greater sensitivity to ifosfamide, such as synovial sarcoma and undifferentiated pleomorphic sarcoma (UPS), and/or when a tumour response could be potentially advantageous, and in

Table 1

Recommendations on second line options in advanced STS based on histologic subtype UPS: undifferentiated pleomorphic sarcoma; HDIFO: high-dose ifosfamide; MPNST: Malignant peripheral nerve sheath tumour.

HISTOLOGIC SUBTYPE	PREFERENTIAL OPTIONS	LESS PREFERENTIAL SUBTYPE
LEIOMYOSARCOMA	Gemcitabine combinations, Trabectedin, Pazopanib	Ifosfamide
UPS	Gemcitabine combinations, Trabectedin, Ifosfamide	Pazopanib
SYNOVIAL SARCOMA	HDIFO, Trabectedin	Gemcitabine combinations, Pazopanib
WD/DD LIPOSARCOMA	Eribulin, Trabectedin, HDIFO	Gemcitabine combinations
MYXOID LIPOSARCOMA	Trabectedin, Eribulin	Gemcitabine combinations, Ifosfamide
MPNST	Ifosfamide-etoposide, HDIFO	Trabectedin, Gemcitabine, Pazopanib
ANGIOSARCOMA	Taxanes, Gemcitabine, Pazopanib	Trabectedin

patients with good performance status multi-agent ChT with adequate-dose anthracyclines plus ifosfamide may be the preferential treatment option [I, B]. [36,37]. For leiomyosarcoma, doxorubicin and dacarbazine could be considered, instead of anthracyclines plus ifosfamide, since this latter could be even detrimental in this specific subtype according to retrospective comparisons. [IV, B] [38]. The combination of gemcitabine plus docetaxel is not recommended as a first-line option for the treatment of advanced STS [39]. The inclusion of patients with advanced STS in clinical trials should be encouraged whenever available (Fig. 1).

Beyond first-line, there are several second-line options (Table 1, Fig. 2):

- High-dose ifosfamide (12–14 g/m²/cycle, administered in 6 days or in 14 days with G-CSF and MESNA support) can circumvent the tumour resistance to regimens with moderate doses of ifosfamide [I, D] [40].
- If available, trabectedin can be used for second line in pretreated STS, especially but not exclusively in liposarcoma, leiomyosarcoma and translocation-related sarcomas [II, B] [41–43]. Nevertheless, the EU approval does not limit its use to these entities since it can be active in other histological subtypes [44].
- The combination of trabectedin and low dose of radiation therapy has been observed to be feasible and active [45]. This could be taken into account when shrinkage is crucial to palliate symptoms in second line [III, A].

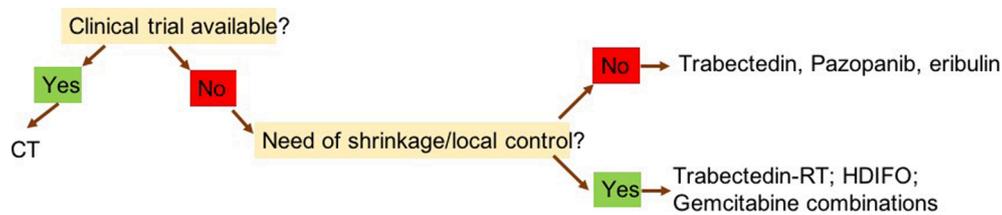


Fig. 2. Algorithm for selection of second line therapies in advanced STS CT: clinical trial; RT: radiotherapy; HDIFO: high-dose ifosfamide.

- Pazopanib is an option except for adipogenic STS after progression to standard chemotherapy [II, E] [46].
- For patients with extraskeletal myxoid chondrosarcoma [47], solitary fibrous tumour [48,49], and other anti-angiogenic sensitive histotypes such as ASPS [50], pazopanib, if available, could be considered as upfront therapy. If it is not available as first line, it should be considered for second line [III, A].
- Eribulin is a therapeutic option in second-lines for the treatment of patients with liposarcomas who have progressed after doxorubicin [II, B] [51].
- Despite not formally approved for sarcomas, the combination of gemcitabine and dacarbazine or gemcitabine and docetaxel are options in doxorubicin-pretreated patients especially, but not exclusively, in leiomyosarcoma and UPS [II, B] [52,53].
- Imatinib is standard medical therapy for those rare patients with locally advanced, unresectable or metastatic dermatofibrosarcoma protuberans [III, A] [55].
- Regorafenib is an option in doxorubicin-pretreated advanced, non-adipogenic STS patients, even after pazopanib [II, B] [56,57].
- There is some evidence, from non-randomized trials, that several molecular targeted agents are active in specific rare histologies. If available, the use of these agents could be an option after discussion in MDTB:
 - o mTOR inhibitors in malignant PEComas [III, B] [58–60];
 - o Crizotinib in inflammatory myofibroblastic tumours preferably associated with ALK translocations [III, B] [61,62];
 - o If available, NTRK inhibitors (entrectinib, larotrectinib) are an active option for advanced sarcomas with NTRK fusions [III, A] [63–65].
- Weekly paclitaxel [III, B] [66] and liposomal doxorubicin [IV, B] [67] are active options in angiosarcoma. The combination of propranolol plus vinblastine [IV, B] [68] has also shown some activity.
- Pazopanib, sorafenib or regorafenib are recommended as second line in vascular sarcomas [III, B] [56,69,70].
- Gemcitabine has shown single agent activity for both angiosarcoma and leiomyosarcoma [54]. It was equivalent to the gemcitabine/docetaxel combination in leiomyosarcoma -LMS- in a single clinical trial [II, C] [71].
- Immune checkpoint inhibitors (anti-PD1) should be used in the context of clinical trials. Nevertheless, notorious activity has been described in the context of advanced ASPS. In sarcoma, predictive biomarkers for these drugs are still lacking. Physicians should be encouraged to enrol patients into clinical trials to further refine their indications.

Special presentation and entities

- **Retroperitoneal sarcomas (RPS).** Patients with suspicion of RPS must be referred to centres with multidisciplinary teams and expertise in the management of RPS [III, A] [72]. Surgery (compartmental or *en bloc* resection) is the cornerstone for the treatment [73,74]. Based on a recently reported negative clinical trial on preoperative RT, this strategy is not recommended outside of a clinical trial [II, C] [75]. Ad-hoc analysis of STRASS study found a significant local control favouring RT administration in low-grade liposarcoma. Ongoing

studies are assessing the efficacy of preoperative ChT or Ch-RT. Postoperative RT should be avoided [IV, D].

- **Uterine sarcomas.** Uterine sarcomas include several sub-entities (LMS, endometrial stromal sarcoma -ESS-, undifferentiated uterine sarcoma) with completely different natural history. Pathology review and molecular biology tests are recommended. In localized disease, morcellation should be avoided [III, E] [76,77], and *en bloc* total hysterectomy is the standard local treatment. Adjuvant RT is not recommended as routine treatment [II, C] [78]. Adjuvant ChT is not recommended as routine treatment either but might be proposed by specialized MDTB in specific situations based on histologic subtype, clinical presentation or in case of tumour fragmentation [IV, C] [79,80]. For low-grade unresectable ESS, endocrine therapy such as aromatase inhibitors are recommended as first-line treatment [IV, B] [81,82]. These treatments should be proposed in clinical trials.
- **Desmoid-type fibromatosis (DF).** A wait-and-see policy can be advised in tumours which are not life threatening or asymptomatic [III, B] [83]. Surgery might be indicated for selected cases after discussion in MDTB. In symptomatic or progressive patients, if systemic therapy is feasible, sorafenib and pazopanib can be recommended as an option after MDTB discussion [II, B], as both showed to improve progression-free survival (PFS) over placebo and methotrexate-vinblastine respectively in 2 randomized trials [84,85]. NSAIDs, tamoxifen, toremifene, cytotoxics (methotrexate plus vinca alkaloids, anthracyclines) and imatinib can be options in view of prospective uncontrolled clinical trials [III, B] [86–90]. Radiotherapy is an option that has demonstrated long term tumour control in prospective and retrospective series [III, C] [91]. Symptomatic improvement and dimensional responses were reported after cryoablation, in small series after short follow-up [IV, C] [92].
- **Tenosynovial Giant Cell Tumour (TGCT).** Surgery represents the standard treatment in patients with localized and diffuse TGCT [III, A] [93,94]. Local relapse after surgery is common in diffuse-type TGCT, with reduced recurrence rates after open access approach as compared with arthroscopy in patients with knee TGCT [III, A] [95]. For unresectable patients, follow-up is an option. For symptomatic patients or to avoid surgical morbidities, imatinib [III, B], nilotinib [III, B] and pexidartinib [II, B] are recommended, if available [96–98].
- **Dermatofibrosarcoma protuberans:** Surgical removal is the mainstay of DFSP management. Mohs surgery is recommended when possible; large tumours may require wide local excision (margins of 3 cm) and reconstruction [99,100]. DFSP often present translocation involving a ligand of platelet-derived growth factor receptor (PDGFR). PDGFRs kinase inhibitor imatinib is the standard medical therapy for patients with DFSP not candidate for a mutilating surgery or with distant metastases [III, A] [55 101].

Follow-up

There is limited published evidence on the best follow-up program in resected localized STS. The main site of distant metastasis of STS is lung. Follow-up should include a physical examination, especially of the primary tumour site to rule out local relapse. Imaging studies of the local site should be preferably MRI in limb, trunk-wall and pelvic primary

tumours, and CT scan in abdominal and pulmonary primary tumours. Chest X-ray or thoracic CT scan usually are enough to rule out distant metastasis. In selected subtypes (see staging section), abdominal CT scan is included also.

The recommended follow-up policy after treatment completion is different between low-grade and high-grade STS. For high grade STS visits every 3–4 month for the first 2–3 years are recommended, then every 6 months for the fourth and fifth year, and then yearly at least up to the tenth year. For low grade STS patients, follow-up could be performed every 6 months for 5 years and annually thereafter [101].

Gastrointestinal stromal tumours (Gists)

Incidence

GISTs are rare tumours, with an estimated incidence of 1–2.8 new cases/100 000 inhabitants/year in Europe [102–104], but data on their incidence in other areas, such as Latin-American countries is unknown. GIST is the most frequent sarcoma in the gastrointestinal tract, being more frequent in stomach (50–60%), followed by ileum and jejunum (20–30%), duodenum (3–5%), rectum-anus (2–4.4%) and other sites (<2%). Extra-gastrointestinal GIST cases have been anecdotally described [105].

Diagnosis and pathology/molecular biology

If accessible, endoscopic ultrasound assessment should be carried out in patients with oesophagogastric or duodenal nodules < 2 cm. If not accessible, follow-up by CT scan is the initial standard approach [III, A]. The exception is rectal GIST, in which a biopsy and further local treatment should always be considered, irrespectively of size [III, A]. Biopsy (with transperitoneal microbiopsy) or excision is the standard approach to tumours ≥ 2 cm in size [III, A] [106]. Mitotic count (expressed if possible as the number of mitoses per 5 mm²), size, site and intra-abdominal tumour rupture need to be assessed and included in pathological report for risk stratification [III, A] [107]. KIT and platelet-derived growth factor alpha (PDGFRA) mutational analysis should always be considered especially for patients under treatment or who are candidates to systemic therapy [III, A] [105,108,109].

Staging and risk assessment

Endoscopy ultrasound is recommended for the initial assessment of oesophagogastric and duodenal nodules. Abdominal and pelvic CT scan (at least biphasic at baseline for a better detection of liver metastasis) and chest X-ray or CT scan, are recommended in addition to histological and molecular diagnosis [III,A]. MRI is recommended for pelvic and rectal GIST, and for the rare forms of oesophageal GIST [IV, B]. PET scan is not mandatory and could be an option for unknown primary, equivocal images, and anticipated evaluation of response to neoadjuvant treatment [IV, B] [110]. Chest CT scan (in addition to abdominal CT scan) is recommended in case of syndromic GIST [IV, B].

Risk assessment following heat maps are the recommended classification risk to take decisions. A higher than 40% recurrence risk should be taken into account to offer adjuvant imatinib [111]. The worse prognostic impact of some mutation types (i.e. deletions involving 557 and/or 558 in exon 11 of *KIT* gene) [112], could be also considered.

Management of local disease

The standard treatment of localized GISTs is complete surgical excision of the lesion (*en bloc* resection with no rupture), with no dissection of clinically negative lymph nodes [III, A]. Whenever possible, sparing surgery is recommended. If laparoscopic excision is planned by an expert surgical team, the technique needs to follow the principles of surgical oncology [III, A] [113,114]. When R0 surgery

implies major functional sequelae, and preoperative medical treatment is not effective, the decision can be made with the patient to accept the possibility of a R1 resection [IV, B]. Neoadjuvant imatinib is the standard treatment for locally advanced GIST for which upfront surgery with major sequelae cannot be avoided and/or R0 surgery is not feasible [115,116]. The optimal duration of neoadjuvant treatment is not known but the recommendation ranges between 6 and 12 months, based on emerging time of resistant clones [III, C]. Close monitoring of the response is recommended to avoid delayed local therapy in case of lack of response to neoadjuvant therapy [110,115,116]. Adjuvant therapy with imatinib for 3 years improves overall survival for patients with a significant risk of relapse [I, A] [117,118]. In case of neoadjuvant and postoperative imatinib, the overall duration of treatment should be completed up to 3 years. Wild-Type GIST, PDGFRA D842V-mutated GIST, succinate dehydrogenase (SDH)-deficient GIST and Neurofibromatosis (NF-1)-related GIST have not demonstrated to experience benefit from imatinib treatment. Thus, adjuvant imatinib in these contexts should be avoided. In patients with KIT exon 9 mutation, only a dose of 400 mg/d has been prospectively tested in the adjuvant setting [III, C] [119,120]. Given the data from advanced disease, the utility of adjuvant treatment at 800 mg/d should be considered within the MDTB and discussed with the patient, explaining potential risks and benefits of this strategy.

Management of advanced/metastatic disease

Tumour genotyping for driver molecular alterations (at least of KIT and PDGFRA) is strongly recommended [IV, A] [107,114].

Imatinib, at 400 mg daily, is the standard upfront treatment of locally advanced inoperable and metastatic disease, [I, A] [121,122]. Imatinib is also the standard treatment for patients with completely resected metastatic disease, although surgery is not recommended as a primary approach in the metastatic setting. Standard treatment of patients with KIT exon 9 mutation is 800 mg daily of imatinib [III, B] [123,124]. In the metastatic setting, treatment with imatinib should be indefinitely continued up to progression, intolerance or specific patient interruption request [I, A] [125]. Dose reductions (i.e. 300 mg or even lower doses) in the context of intolerance and efficacious treatment should be explored. A randomized clinical trial exploring the utility of surgical rescue of residual metastatic disease after imatinib was interrupted due to poor accrual [II, C]. Hence, this option should be individualized after the decision-making process with the patient [126,127]. Interventional techniques (radiosurgery, radiofrequency ablation -RFA-) are options in selected cases [IV, C] [128,129]. In the case of tumour progression on 400 mg of imatinib, the dose can be increased to 600–800 mg daily if accessible [III, B] (with the exception of insensitive mutations) [123,130].

In the case of confirmed progression or rare intolerance to imatinib, standard second-line treatment is sunitinib (50 mg/d, 4 weeks of therapy/2 weeks off) [I, A] [131]. The continuous dosing of 37.5 mg/d is an alternative option, although there is no formal prospective comparison with the intermittent dosing [132].

Regorafenib, at the dose of 160 mg daily for 3 out of every 4 weeks, is the standard third-line therapy for patients progressing on or failing to respond to imatinib and sunitinib [I, A] [133,134]. Treatment schedule (dose, duration, interruption) should be adapted to patient's tolerability. Rechallenge with imatinib could be an option with limited activity in patients progressing to all approved tyrosin-kinase inhibitors (TKI) options. [II, B] [135,136]. Some evidence exists that continuing a treatment with TKI is effective even in the context of slow progression. If available, ripretinib is recommended as 4th line for GIST progressing after imatinib, sunitinib and regorafenib [II, A] [137].

If available, avapritinib is recommended for PDGFRA D842V-mutated GIST [III, A] [138].

Table 2

Levels of evidence and grades of recommendations (adapted from the Infectious Disease Society of America-United States Public Health Service Grading System).

LEVELS OF EVIDENCE	DEFINITION
I	Evidence from <i>meta</i> -analyses (based on well conducted clinical trials) or at least one large randomized controlled trial with low potential for bias)
II	Small randomised trial or large randomized trials/ <i>meta</i> -analyses with suspicion of bias or heterogeneity
III	Prospective cohort studies
IV	Case-control or retrospective cohort studies
V	Case reports, expert opinions, studies without control group
GRADES OF RECOMMENDATION	
A	Strong evidence for efficacy and meaningful clinical benefit: strongly recommended.
B	Strong or moderate evidence for efficacy but restricted clinical benefit: generally recommended
C	Inadequate evidence for efficacy or clinical benefit not exceeding risks: optional
D	Moderate evidence against efficacy or poor outcome: generally not recommended
E	Strong evidence against efficacy or poor outcome: never recommended or contraindicated

Follow-up

Evidence on the optimal follow-up procedures of resected localized GIST is lacking. Liver and peritoneum are the most frequent sites of metastatic spread, being lymph nodes, bone and lungs much more infrequent sites, and usually associated to heavily pretreated patients or with syndromic GIST. Thus, follow-up has to include abdominal CT scan or MRI. Follow-up procedures should be adapted to risk. High-risk patients are at a higher risk of relapse in the first 3 years after completion of adjuvant therapy. We recommend follow-up with an abdominal CT scan or MRI every 3–6 months during adjuvant therapy and then, after completion of adjuvant therapy, CT scan or MRI every 3 months for 2–3 years, then every 6 months until the fifth year from adjuvant completion, and then annually. For low-risk tumours, the utility of a periodic follow-up is unknown. We recommend, if possible, abdominal CT scan or MRI, every 6–12 months for 5 years.

Methodology

The Sarcoma European Latin-American Network (SELNET) aims to improve clinical outcome in sarcoma care, with a special focus in Latin-American countries.

These Clinical Practice Guidelines (CPG) have been agreed by a multidisciplinary group of the SELNET consortium, with representatives of all partner entities including patient's advocacy groups (SPAEN). These guidelines are conceived to provide the standard approach to diagnosis, treatment and follow-up in STS and GISTs in the Latin-American context. The previous recommendations are based on evidence are supported by published medical peer-reviewed data. Hence, the recommendations should be considered 'standard' approaches, and were supported by the highest level of evidence. Several virtual meetings were held to elaborate a draft of the guidelines and an on-site consensus meeting was celebrated in Lyon (France). Final version of the guidelines was circulated and agreed by all CPG working group members.

The levels of evidence and grades of recommendation have been followed and applied using the system presented in Table 2. For those recommendations hardly supported or non-supported by evidence, a multidisciplinary consensus was reached in accordance to professional expertise.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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