



Soft Tissue Sarcoma: What is best practice?

18:30-19:45, Thursday 10th November 2016
Opala Rooms I, II and III, 1st Floor, Corinthia Hotel Lisbon

Chaired by Alessandro Gronchi

With Angelo Paolo Dei Tos, Peter Hohenberger
and Robin Jones

Scientific summary

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Welcome message

Dear Colleagues,

Thank you for attending the satellite symposium entitled 'Soft Tissue Sarcoma: What is best practice?' at the Connective Tissue Oncology Society Annual Meeting 2016.

Lisbon provided a soulful, captivating and picturesque host backdrop for this conference that brought together a unique community of medical professionals from across Europe. The aim of this symposium was to facilitate the management of soft tissue sarcoma, and the implementation of new discoveries in clinical practice. It addressed the challenges faced by clinicians in an increasingly complex treatment landscape.

During the session, the expert Faculty guided us through this complexity by also placing the latest developments in soft tissue sarcoma into the context of treatment. They also provided their insights into how we can best use these latest developments in sarcoma treatment and how to implement them within the context of a multidisciplinary care team.

We hope that you found this symposium a valuable educational experience and that it furthered your understanding of this evolving field.

Yours faithfully,

Alessandro Gronchi

Alessandro Gronchi - *Chair*

Faculty biographies



Alessandro Gronchi

(Symposium Chair)

Fondazione IRCCS, Istituto Nazionale dei Tumori, Milan, Italy

Alessandro Gronchi MD received his MD degree from Milan University with honours in 1992 and completed his residency training in General Surgery at the San Raffaele General Hospital, Milan.

He completed his training with a fellowship in Surgical Oncology at the National Cancer Institute, Milan in 1998 and later joined the faculty in the Department of Surgery at the National Cancer Institute, as attending surgeon in the Sarcoma Service. He has been Chair of the Sarcoma Service at the National Cancer Institute in Milan since 2001 and runs their Sarcoma database, which gathers clinical and biological information on over 8000 patients affected by soft tissue sarcomas (STS), desmoid-type fibromatosis (DF) and gastrointestinal stromal tumours (GIST), treated over the past three decades.

As Principal Investigator on several international trials on STS, DF and GIST, Dr Gronchi's research has focused on neoadjuvant therapies in extremity and retroperitoneal sarcomas, new targets for specific STS subtypes, different telomere maintenance mechanisms in STS subtypes, genomic characterization of DF and mechanisms of resistance to therapy in GIST.

He currently serves as Chairman of the Soft Tissue Sarcoma Committee of the Italian Sarcoma Group (ISG), Chair of the European Organization for Research and Treatment of Cancer (EORTC) Soft Tissue and Bone Sarcoma Group and President of the Connective Tissue Oncology Society (CTOS) for 2016. Dr Gronchi is a member of the Board of Directors of the Italian Society of Surgical Oncology (SICO), the European Society for Medical Oncology (ESMO), the European Society of Surgical Oncology (ESSO), the American Society of Clinical Oncology (ASCO) and the Society of Surgical Oncology (SSO). Dr Gronchi has authored more than 240 scientific publications, serves as Associate Editor of the *Sarcoma Journal* and was Sarcoma Section Editor of the *Annals of Surgical Oncology* 2009-2014.



Angelo Paolo Dei Tos

Treviso General Hospital, Italy

Angelo Paolo Dei Tos, MD, is Professor of Pathology at the University of Padua School of Medicine, Director of the Department of Oncology and Director of Pathology at the General Hospital in Treviso, Italy. He is also a Consultant Pathologist at the Istituto Ortopedico Rizzoli in Bologna. Professor Dei Tos is a past Chairman and founder of the Working Group on Soft Tissue Tumour Pathology of the European Society of Pathology (ESP), past President of the International Society of Bone and Soft Tissue Pathology (ISBSTP), panel member for the WHO Working Group for the Classification of Tumours of Soft Tissue and Bone, member of the Board of Directors and Past President of CTOS, member of the Soft Tissue and Bone Group of the EORTC, and a faculty member of ESMO.

Professor Dei Tos is a member of the editorial boards of several scientific journals, including the *Journal of Pathology*, the *American Journal of Clinical Pathology*, the *Journal of Clinical Pathology*, *Advances in Anatomic Pathology*, *Seminars in Diagnostic Pathology*, *Virchows Archiv*; and *Surgical Oncology*. He is also co-editor in chief of the open access journal *Clinical Sarcoma Research*.

He has published more than 250 peer-reviewed articles, mainly focused on soft-tissue and tumour pathology/biology and oncological pathology. His main clinical interest is focused on sarcoma morphologic and molecular diagnosis.



Peter Hohenberger

University of Heidelberg, Germany

Peter Hohenberger, MD, is Head of the Division of Surgical Oncology and Thoracic Surgery at the Medical Faculty Mannheim, University of Heidelberg. He is a board-certified surgeon in visceral and vascular surgery as well as in thoracic surgery and surgical intensive care. His professional education was received at the University of Erlangen including training in psychology and pathology. Dr Hohenberger's surgical qualifications were received at the University of Heidelberg, including a senior position at the Department of Surgery followed by a Professorship in Surgical Oncology at Charité, Berlin.

Having specialized in the treatment of GIST and sarcoma, he became Chairman of the EORTC Soft Tissue and Bone Sarcoma Group (STBSG). Having worked with the EORTC (GI, melanoma and STBSG) since the 1980s, he was member of the Protocol Review Committee as well as the Board for nine years each. He served on the faculty of the American Association for Cancer Research (AACR)/ASCO/Federation of European Cancer Societies (FECS)/ESMO course on Methods of Clinical Cancer Research for seven years and is a member of the advisory board of Sarcoma Patients Euronet (SPAEN), Das LEBENSHAUS and SOS-DESMOID. Dr Hohenberger chairs the German Interdisciplinary Sarcoma Group (GISG) and the Interdisciplinary Working Party on Sarcoma (IAWS) of the German Cancer Society (DKG).

The Mannheim Sarcoma Center is a major contributor to multinational randomised studies on the treatment of GIST and sarcoma, hosts the Data Center of GISG and was co-founder of the German Sarcoma Conference. Trial activities also include EU-funded EUROSARC, CONTICANET, MITIGATE and, most recently, as part of a research network pursuing the treatment of imatinib-resistant GIST.



Robin Jones

The Royal Marsden Hospital, UK

Dr Robin Jones is a medical oncologist specialising in the treatment of bone and soft tissue sarcomas and is Head of the Sarcoma Unit at The Royal Marsden Hospital.

He completed his medical training at Guy's and St Thomas' Hospital, and his oncology training at The Royal Marsden. His postgraduate research degree, with Professor Dowsett at the Institute of Cancer Research (ICR), evaluated potential predictive and prognostic factors in breast cancer patients treated with neoadjuvant chemotherapy.

In January 2010, he was appointed Associate Professor and Director of the Sarcoma Program at the University of Washington and Fred Hutchinson Cancer Research Center in Seattle. He led a successful, grant funded programme and continued his translational and clinical trial-based research.

His laboratory work with Dr Seth Pollack evaluated novel immunotherapeutic targets in bone and soft tissue sarcoma, and has led to a number of early-phase immunotherapeutic clinical trials. Dr Jones returned to The Royal Marsden and ICR in December 2014, as Sarcoma Clinical Trials Team Leader and Consultant Medical Oncologist.

He has experience in conducting Phase I, II and III trials, and translational studies in sarcoma. He is continuing a number of trials of investigational agents as well as laboratory-based immunotherapy studies.

Translating the biology of soft tissue sarcoma (STS) into therapy



Dr Angelo Paolo Dei Tos
Treviso General Hospital, Italy



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The educational symposium started with a discussion of the role of biology and genomics in the treatment of soft tissue sarcoma (STS).

Dr Angelo Paolo Dei Tos explained that STS is a heterogeneous group of rare malignancies, with an annual incidence in Europe of 5 per 100,000¹, where both factors affect diagnostic accuracy. The outcomes for patients have not improved substantially over the years – in up to half of patients the disease metastasises to the lungs, and 5-year overall survival (OS) rates range from 55% to 65%².

Is therapy of STS biology-driven?

The basic question of my talk, said Dei Tos, is whether the treatment of STS is driven by the underlying biology. Most often the answer is no, he said. The majority of drugs used by medical oncologists are simply cytotoxic

and their effect is independent of the intrinsic biology of the lesion. He said that this holds true even for olaratumab in a way – the drug has a target, but we do not know why it has such a dramatic effect.

This is not to say that there are no opportunities for biology-driven therapy – in fact, there are several STS types where we could target the innate biology, he added.

As an example of one such type of STS, Dei Tos shared the case of a 63-year-old man who, after presenting with a painful swelling of his right knee, was diagnosed with a giant cell tumour of the tendon sheath (GCCTS) in 2012. Despite the lesion being benign, the man subsequently underwent an amputation.

The presenter explained that GCCTS arise as a result of

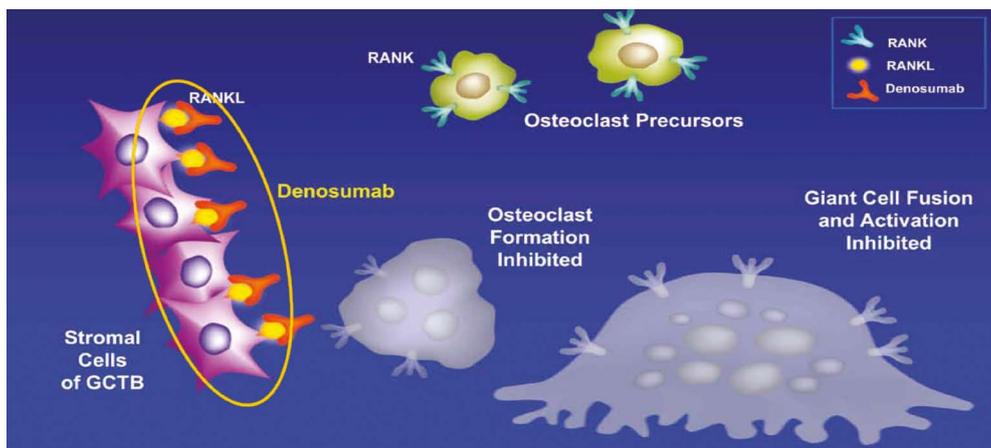


Figure 1: Mechanism of action of denosumab. Abbreviations: GCTB, giant cell tumour of bone

a translocation involving chromosome 1p13, leading to aberrant overexpression of CSF1. These cancerous cells attract non-neoplastic CSF1 receptor-expressing macrophages, resulting in the formation of a tumorous mass^{3,4}.

These findings have been translated into the clinics, he said, and at least three different targeted therapies are now available for patients with GCCTS. Dei Tos believes that if his patient presented now, he would not need an amputation.

Another example of a biology-driven approach is the use of denosumab to treat giant cell tumour of bone (GCTB). The lesion is characterised as benign, but can be locally aggressive and metastasises to the lungs in about 5% of cases. The TNF-related cytokine RANKL has been implicated in the pathogenesis of GCTB (Fig 1), and the anti-RANKL agent denosumab has shown promise in stabilising the disease⁵. This is another example of “one mechanism and one way to inhibit that mechanism”, said Dei Tos.

He admitted, however, that several questions remain unanswered, such as: the appropriate timing to cease treatment; whether lifelong therapy is feasible or not; and what the long-term side effects are⁶.

Is biology-driven treatment always feasible/useful?

Dei Tos said that he is often asked how it is that pathologists and clinicians can ignore the information from next-generation sequencing (NGS), in response to which he asks how often do you expect to find a relevant, targetable mutation?

“As a surgical and molecular pathologist, I strongly believe in genomics”, he commented, and although NGS is a “tremendously important” technique that is robust and fast with a broad range of applications, Dei Tos believes that one should “avoid following fantasies”. “Currently, for the sake of the treatment of patients, any NGS is totally irrelevant. There is no clinical application.”

The important question, however, is whether a biology-driven therapeutic approach is always feasible or indeed useful?

For instance, a recently described subgroup of round cell sarcomas is characterised by a *CIC-DUX4* fusion^{7,8}. Although the entity is classified as Ewing sarcoma-like, patients do not respond to Ewing sarcoma treatment regimens, and the disease is life-threatening and difficult to treat.

Shih-Chiang Huang and colleagues⁹ recently reported the presence of a *CIC* fusion in a patient with angiosarcoma. The signature was similar to that observed in round cell tumours. If the treating physician were using a biology-driven strategy, they would target the translocation. But: “Would you treat an angiosarcoma in the same way as a round cell sarcoma just because they harbour the same molecular aberration?”, asked Dei Tos. He emphasized that the underlying biology is relevant, but not at the expense of ignoring the type of disease. “You cannot make a unique and rare genomic aberration a rule for all angiosarcoma patients.”

That said, NGS has been very useful in the identification of new targets, remarked Dei Tos. As an example, Brenca *et al*¹⁰ used NGS to identify an *ETV6-NTRK3* gene fusion in patients with gastrointestinal stromal tumours (GISTs) negative for the commonly occurring driver mutations in *KIT*, *PDGFRA* or *BRAF*. And two patients in the USA have “responded dramatically” to a TRK inhibitor, the presenter told the audience.

Dei Tos said: “Although I am cautioning you against taking shortcuts with genomics, I am also saying that there is great hope in genomics. If we do a good job of identifying relevant targets, we may be able to develop effective treatments starting from a preclinical rationale.”

“But you should not disregard the pathology and morphology,” he stressed.

In a recently published article, Ahmed and Abedalthagafi¹¹ challenged the role of histomorphology in cancer diagnosis, saying it is an “ancient technique” that requires additional tests with associated costs, and that the diagnosis is “unreliable”. They propose a system based on molecular classification, which Dei Tos believes is a “naïve approach” as there can be major overlaps among

unrelated neoplasms, and because the same molecular aberration can occur in both malignant and benign conditions.

“Biology can be tricky,” concluded the presenter, and the idea we had 20 years ago about “one translocation, one disease”, is wrong. Harboring the same translocation does not mean that different lesions will behave in the same way, there are other factors at play as well.

Panel discussion

Commenting on the presentation, the Chair Alessandro Gronchi said that, “we need to admit that the targeted approach is somewhat failing the initial promises.”

Panellist Dr Robin Jones agreed, adding that the most common subtypes of STS are “black boxes in terms of the underlying biology”. There are some exceptions – such as GIST – where patients derive long-term benefit from using targeted agents, such as tyrosine kinase inhibitors (TKIs), but the treatment is still not curative in the metastatic setting.

Gronchi remarked that even with targeted agents, the effect on the disease does not necessarily directly correlate with the sequencing results – for instance, no one knows why sunitinib works; it does work, but it has nothing to do with sunitinib’s effect on VEGF.

Dei Tos added that the targeted approach works for entities that have a simple, unique underlying pathobiology, but “the truth is that 80% of sarcomas have complex aberrations”, and a biology-driven strategy is less successful in such a scenario.

Moreover, the presence of a translocation or mutation does not guarantee the long-term success of treatment, said Gronchi. For instance, we know the driver mutations in GIST and we can successfully target them, but that success does not last forever. Therefore, we need to go beyond simply identifying alterations to target, the Chair concluded.

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Optimal care in the multidisciplinary setting



Professor Peter Hohenberger
Mannheim University Medical
Center, Germany



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The second speaker, Professor Peter Hohenberger, used the example of a 53-year-old female patient to underline certain myths associated with the diagnosis and treatment of STS.

Myth – ‘Sarcomas should not be biopsied’

The patient noticed a swelling in her lower leg that persisted for 2 to 3 weeks. On palpation, a nodular mass a little bigger than a golf ball could be felt.

On being asked how they would proceed, just under half (46%) of the audience said they would obtain new images with contrast-enhanced magnetic resonance imaging (MRI), 38% said they would resect as there were no signs of aggressive malignancy, while 33%

opted to perform an ultrasound exam and conduct a trucut biopsy.

Hohenberger said that one of the myths of sarcoma is that ‘sarcomas should not be biopsied’, owing to the risk of local recurrence. He noted that, “You would not resect an 8 cm lesion in a breast cancer patient without first conducting a biopsy, but you would resect a sarcoma of the same size without a biopsy because of this myth.”

A retrospective review¹ of 10 paediatric patients with bone sarcoma showed that “the incidence of tumor seeding in the core-needle biopsy tract in bone sarcoma patients is apparently low, and possibly negligible”. Furthermore, analysing data on 100 patients with retroperitoneal STS, Boccone *et al*² did not find any

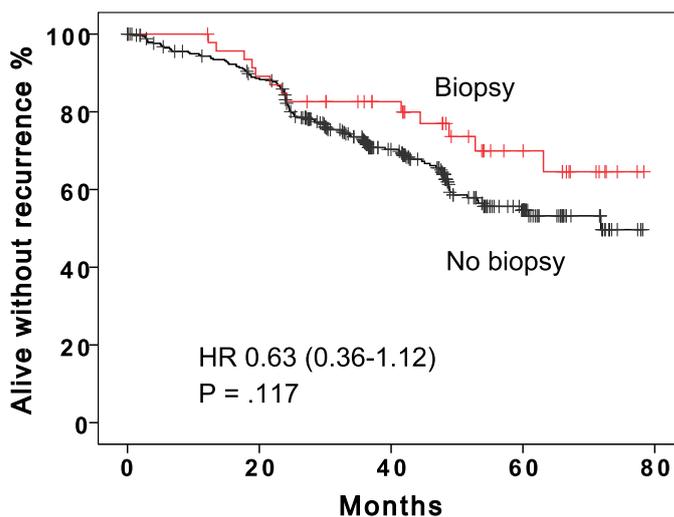


Figure 2: Recurrence-free survival of patients who did versus did not undergo a diagnostic transabdominal needle biopsy prior to surgery. Abbreviations: HR, hazard ratio

increased risk of local recurrence in patients who did, versus those who did not, undergo a preoperative biopsy.

Even in patients with GIST, recurrence-free survival was no worse for those who had a diagnostic transabdominal needle biopsy compared with those who did not³ (Fig 2), said the presenter.

In light of these results, Hohenberger explained that the correct option at this stage was to get obtain more images with contrast enhanced MRI, which is what they did, finding that the lesion was deep, extending to the tibia and fibula. They then performed a trucut biopsy, the results of which suggested that the lesion was a high-grade malignant peripheral nerve sheath tumour (MPNST). There is no official grading system for MPNST, Hohenberger explained, but the lesion was considered high grade in light of the high mitotic count and the fact that it developed over 2 to 3 weeks.

Myth – ‘Sarcomas have a capsule and can be enucleated along’

“What would be your next step?”, the presenter asked, in response to which 38% of attendees said they would attempt preoperative downstaging by irradiation or TNF- α isolated limb perfusion, which could facilitate resection with clear margins. Thirty-three per cent of the audience opted to attempt an R0 resection followed by irradiation.

This brings us to the next myth, he said, that ‘sarcomas have a capsule and can be enucleated along’. A study by White *et al*⁴ showed that among 15 patients with a high-grade extremity or truncal STS, malignant cells could be detected in tissues beyond the tumour margins, within areas of peritumoural oedema, in 10 cases.

Going back to the patient in question, the speaker explained that as the tumour was larger than 5 cm and deep, it was categorised as a stage III high-grade MPNST, “which you cannot treat with surgery alone”. The appropriate actions at this stage would be using combined modality therapy or preoperative downstaging, he said.

Several options are available prior to surgery for such a patient, such as isolated limb perfusion, radiotherapy, classical chemotherapy, chemotherapy plus

hyperthermia, and targeted therapy. Of these, his team opted for isolated limb perfusion for the patient being discussed.

The technique involves isolation of the limb, followed by introduction of a cannula into the artery and vein, after which the limb is heated to 39°C, and TNF α and melphalan is applied. Isolated limb perfusion does not come without side effects, such as oedema and epidermolysis, said the presenter, but it helps to necrotise and avascularise the tumour, which can then be resected.

He explained that neoadjuvant therapy does not shrink the tumour *per se*, but as Grabellus *et al*⁵ showed, it extends the width of the fibrous capsule and the reactive zone, which improves resectability.

Myths – ‘Limb amputation protects from distant metastases’

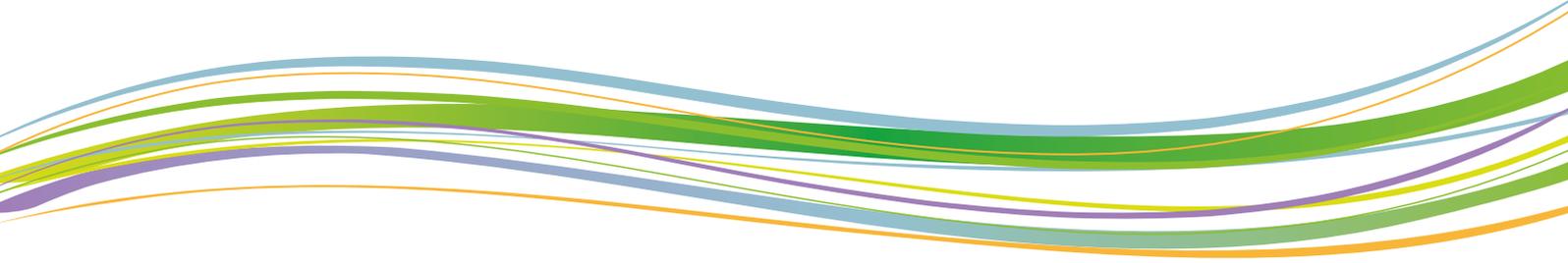
After undergoing isolated limb perfusion, the patient’s tumour became necrotic and the peritumoural oedema vanished. “What should we do next?” Hohenberger asked the symposium attendees.

Just over a third (35%) opted for limited resection/enucleation with adjuvant high-dose radiation, while just under a third (29%) chose function-preserving. Twenty-four per cent said that the resection would be tricky and require plastic reconstruction, while 12% chose neoadjuvant radiation; no one opted for lower limb amputation.

The correct option at this juncture is resection with a plastic reconstruction, said Hohenberger, which is what the patient underwent.

He said that the choices highlight a commonly held belief, that is, ‘limb amputation protects from distant metastases’. This is simply not true, Hohenberger said, as a sarcoma that needs limb amputation is large enough to be considered a systemic disease. “An 8 cm breast cancer is a systemic disease, and the same is true for sarcoma – if you amputate at that stage, it is far too late.”

The final pathology report of the patient showed that the tumour was completely necrotic and that all margins were clear, the presenter concluded.



Panel discussion

The Chair reminded the audience that besides isolated limb perfusion, which is not available at all centres, chemotherapy, either alone or with radiation, can also be a valid neoadjuvant option for patients. He pointed out that chemoradiation has not been shown to be inferior to isolated limb perfusion in terms of outcomes.

Hohenberger agreed and reiterated that all of the neoadjuvant options he had listed were valid, and as there are no randomised trials comparing the approaches, the ultimate choice depends on availability and expertise, among other factors.

Gronchi noted that the choice would also depend on the extent to which you believe the systemic risk needs to be addressed, in which case a systemic agent would need to be added.

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Current perspectives on the treatment of patients with advanced soft tissue sarcomas



Dr Robin Jones
Royal Marsden Hospital, UK



[Click here to view a clip from Dr Robin Jones' presentation](#)

Dr Robin Jones wound up the symposium by providing an outline of systemic therapy options for STS patients with unresectable, metastatic disease.

Historically, the options available for this patient population have been limited and the prognosis relatively poor, he said, with a median OS in the region of 12 months. However, recent data suggest that survival may have improved to a median of 16–19 months, and more options are available for patients in addition to the historical “one size fits all” regimen of anthracycline with or without ifosfamide.

Moreover, for certain subtypes, there are clear indications regarding which drugs should be used, such as the TKI imatinib for dermatofibrosarcoma protuberans and aromatase inhibitors for endometrial stromal sarcoma.

Current systemic therapy: First-line metastatic disease

Doxorubicin – either alone or with ifosfamide – has been the mainstay of the first-line treatment of metastatic STS, but the question of whether to use it alone or in combination remains open for debate for individual patients.

The phase III EORTC 62012 trial¹, in which 455 patients with locally advanced or metastatic STS were randomly assigned to receive single-agent doxorubicin or alongside ifosfamide, found no significant difference in OS between the treatment arms. However, median

progression-free survival (PFS) was significantly longer in the combination arm and the overall response rate was also significantly higher.

Highlighting the implications of these findings, Jones said that in the light of no survival difference, doxorubicin monotherapy remains a reasonable choice for palliation, but combination therapy can be considered in certain scenarios, such as if tumour shrinkage is required for symptom control or if the disease is imminently life threatening. As such, he stressed that “this is a discussion to be had with every patient”.

Other options studied in the first-line metastatic STS setting include gemcitabine plus docetaxel and doxorubicin in combination with palifosfamide or evofosfamide, the presenter said, but the outcomes have been comparable to those with doxorubicin alone.

For instance, in the randomised GeDDis trial², OS and PFS were comparable for patients given doxorubicin and those given gemcitabine plus docetaxel, while in the phase III SARC021 trial³, addition of the hypoxia-activated prodrug evofosfamide to doxorubicin did not significantly improve survival outcomes in patients with advanced STS. But the important point to note is that at a median of 18.4 and 19.0 months in the combination and monotherapy arms, respectively, OS “compares very favourably with historical data”, said Jones.

Jones then asked the audience why the median OS of this patient population has improved so much over the

years. The overwhelming majority (90%) agreed that it was due to a combination of more systemic therapy options, better palliative care, improved diagnosis and use of local treatment modalities.

An agent that has shown promise in the first-line treatment of metastatic disease is the anti-PDGFR α antibody olaratumab. In a phase II trial⁴, the addition of olaratumab to doxorubicin reduced the risk of progression by a significant 33% and the risk of death by 56%, with an “impressive” median OS of 25.0 months versus 14.7 months for single-agent doxorubicin.

Case 1

A 28-year-old man with no medical history of note presented with a right thigh myxoid liposarcoma in June 2015. He was treated with neoadjuvant radiotherapy, and the tumour was removed surgically in September 2015. In November of that year, he presented with a solitary metastasis in a lumbar vertebra, which was resected and postoperative radiation given. However, in April 2016 the patient presented with multifocal metastatic disease, with at least five lesions.

Asked what their management plan would be, doxorubicin alone (50%) was the most popular audience choice, followed by doxorubicin plus ifosfamide (36%), both of which are valid options for such a patient, Jones commented.

After discussing the options with the patient, he was given doxorubicin monotherapy, which led to shrinkage of the lesions. But if after six cycles of doxorubicin, two of the lesions had increased in size, but there were no new disease foci – “what would you do in that scenario?”, asked Jones.

Just under half (46%) the audience opted for trabectedin, which, the presenter explained, would be the obvious choice if all the lesions had progressed or if there were new lesions. But with only two lesions increasing in size, radiofrequency ablation is perhaps the better strategy as that allows the use of trabectedin to be deferred for a period of time.

The Chair pointed out that the approach to treatment in such situations is complicated, and that it is important to tailor the strategy to the individual patient, in spite of the data from randomised trials. “You need to be aware of the data, and then decide what is best for the patient.”

Current systemic therapy: Second line and beyond

There are several second- and later-line options available for patients with metastatic STS, said Jones, who then discussed these in more detail.

A phase III EORTC trial⁵ investigated two schedules of

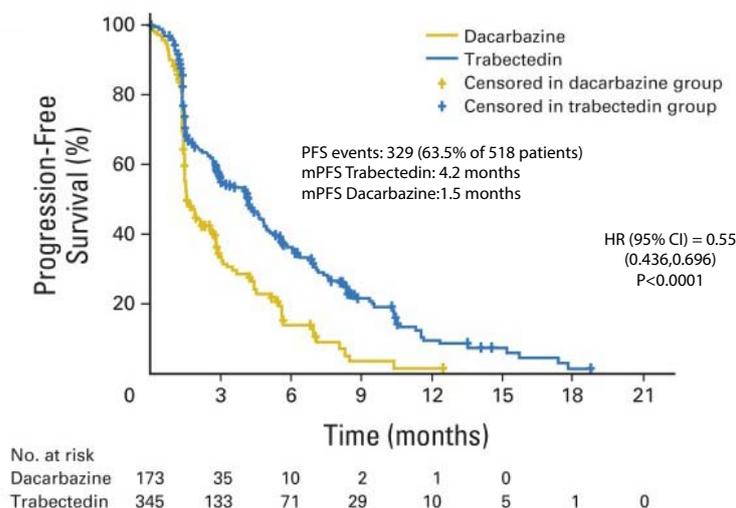


Figure 3: Progression-free survival of patients treated with trabectedin versus dacarbazine. Abbreviations: CI, confidence interval; HR, hazard ratio; mPFS, median progression-free survival; PFS, progression-free survival

ifosfamide – 9 g/m² continuously over 3 days or 3 g/m² per day in 3 hours over 3 days – versus standard doxorubicin, and showed no significant differences in PFS across the three arms. However, toxicity was worse in the ifosfamide than in the doxorubicin arm.

The multi-target TKI pazopanib was approved⁶ by the US Food and Drug Administration (FDA) on the basis of the phase III PALETTE trial⁷, which showed a significant improvement in PFS for pazopanib-treated patients relative to those given placebo, although OS was comparable between arms.

Trabectedin has been evaluated in various phase II and III trials, and has been approved for the second-line treatment of STS in the European Union since 2007⁸. However, the agent received approval by the FDA in 2015⁹; the decision was based on phase III trial findings demonstrating a significant PFS, but not OS, benefit in favour of trabectedin versus dacarbazine among previously treated patients with metastatic liposarcoma or leiomyosarcoma¹⁰ (Fig 3).

Another agent, eribulin, has also shown promise in the second- and later-line setting. A phase III trial comparing eribulin with dacarbazine in leiomyosarcoma and liposarcoma patients met its primary endpoint of OS, showing a significant improvement in the eribulin arm¹¹. Of note, the median OS duration was 15.6 months among eribulin-treated participants in the liposarcoma subgroup, compared with 8.4 months for those given dacarbazine.

Other options available for this patient population include gemcitabine plus docetaxel, which Jones said is a useful regimen, particularly for patients with leiomyosarcoma and undifferentiated pleomorphic sarcoma, and gemcitabine in combination with dacarbazine.

Case 2

A 67-year-old woman with a history of hypothyroidism underwent preoperative radiation and resection of a right thigh pleomorphic sarcoma in July 2015. Four months later, however, she developed small-volume metastatic disease in the lungs – altogether, there were about 15 lesions, all less than 1 cm in size.

Jones asked the audience how they would treat this patient. Over half (56%) chose doxorubicin, which is exactly the treatment she received, in the context of a randomised phase III trial. The patient commenced therapy in April 2016, but by November she had progressed; in particular, one lesion in the right lower lung grew to approximately 2.5 cm. At this stage, 42% of the audience members said that they would consider radiofrequency ablation. “Which is how we are going to proceed,” said the presenter.

Under evaluation

To round off the discussion, Jones highlighted a number of agents and approaches that are currently being evaluated in patients with advanced STS and which have shown various degrees of promise. These include immunotherapeutic agents, such as pembrolizumab, albumin-bound doxorubicin (aldoxorubicin), CDK4 inhibitors, regorafenib and adoptive T-cell therapy.

Finally, he closed the session by emphasising that drug development takes a very long time, especially for a disease as heterogeneous as soft-tissue sarcoma.

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This programme is made possible thanks to independent educational sponsorship from Eli Lilly and Company