

Introduction

Soft tissue sarcomas are a very rare form of cancer. A soft tissue sarcoma is a malignant growth of the so-called connective and supportive tissue (muscles, ligaments, fat, joint areas and blood vessels, etc.). Unlike other forms of cancer with malignant growth in a certain organ (e.g. breast cancer, bowel cancer or lung cancer, etc.), a soft tissue sarcoma can occur anywhere in the body. This means that this disease confronts doctors from very different specialist fields. Very many doctors never or only extremely rarely encounter a patient with a soft tissue sarcoma over the course of their professional lives. Therefore, it is extremely important that patients can find information on this disease and whenever possible be supported and treated by experienced specialists.

The proportion of connective and supportive tissue is particularly high in the arms and legs. This is why sarcomas frequently (up to 70%) occur in the limbs. Surgical removal of the sarcoma is among the most important treatment options. However, the sarcoma must be removed completely and with a "safety margin". Otherwise there is a high risk of recurrence (relapse) and of tumour spread (metastases), leading to a worsened prognosis (chance of healing) of the disease.

Operations in which a sarcoma is removed without a safety margin or, far worse, is not removed completely are a very high risk for sarcoma patients. Therefore, immediate, surgical removal of an advanced sarcoma may not be the best treatment option. In order to completely remove an advanced sarcoma, it may be necessary to cut out important structures (nerves, blood vessels or muscle groups, etc.) or even to amputate the limb.

The disease may progress even after an amputation (metastases). This is why efforts should initially be undertaken to destroy the sarcoma located in the leg or the arm using other treatment methods. In most cases, a far smaller operation can then preserve the functions of the limb.

In our centre we offer the most effective treatment option, namely hyperthermal isolated limb perfusion (ILP) with TNF-alpha and melphalan in addition to chemotherapy, radiation therapy and plastic-surgery tissue reconstruction. Our team of experts, consisting of surgeons, oncologists, radiation therapists, psychologists and other specialists, focuses on the best, individual sarcoma treatment, using the latest forms of therapy.

What is isolated limb perfusion?

ILP is an abbreviation for "Isolated Limb Perfusion". In this operation, only the leg or arm affected by the tumour is treated. This is achieved by rerouting the circulation of the leg or arm using a heart-lung machine, thus interrupting all exchange of blood between the limbs and the body's blood supply. The medicaments TNF-alpha (tumour necrosis factor alpha) and melphalan (chemotherapy medication) can then be administered exclusively to the isolated leg or arm.

Effects of ILP:

ILP is carried out under “hyperthermic” conditions. This means that the temperature of the affected limb is raised to 38°- 40° Celsius. This ensures optimum blood supply to the tumour (so-called shunting) and the medicaments can develop their full effectiveness.

TNF-alpha has several effects over the course of the 90-minute perfusion. Firstly, TNF-alpha strongly increases absorption of the chemotherapy medication melphalan in the tumour. This heightens destruction of the tumour cells many times over. Secondly, TNF-alpha triggers a destruction of the architecture of blood vessels in the sarcoma by causing a shutdown of the blood supply to the tumour. This is accompanied with a severe inflammatory reaction in the tumour tissue.

In at least 70 % of the treated patients, these effects lead at least largely to a gradual death of the tumour.

ILP should be considered in the following situations:

- The tumour is in a very advanced stage.
- The tumour cannot be removed with the required safety margin.
- The tumour cannot be removed completely without there being a risk of severe damage (removal of muscle groups, nerves or blood vessels, etc.) or even amputation.
- The tumour is recurring (relapse) following previous operations.
- The tumour has already been operated on, but was not entirely removed.

ILP cannot simply replace surgical removal of the tumour. However, by destroying the tumour, it permits postponement of the operation. Unlike traditional surgical intervention, it is then no longer necessary to maintain a safety margin. Accordingly, in most cases, the affected arm or leg can be completely preserved.