CONDITION

Adult soft tissue sarcoma

Learn about adult soft tissue sarcoma symptoms, risk factors, diagnosis, treatment, complications, and long-term follow-up.

WHAT IT IS
Group of cancers beginning in supporting tissues

BODY SYSTEM
Muscles and supporting tissues

MAIN SYMPTOMS
Enlarging lump, swelling, pain, reduced movement

WHAT CAUSES IT
Usually unknown genetic changes

HOW IT IS DIAGNOSED
Biopsy with pathology examination

MAIN TREATMENT
Surgery

CAN IT BE CURED?
Sometimes, localized tumors can be removed

IS IT AN EMERGENCY?
Sometimes, severe breathing difficulty or uncontrolled bleeding

LONG-TERM OUTLOOK
Variable, with recurrence or distant spread possible

Overview

Adult soft tissue sarcoma is a group of cancers that begin in supporting tissues such as muscle, fat, blood vessels, nerves, tendons, and tissue around joints. Sarcomas can develop almost anywhere, but commonly occur in an arm, leg, the abdomen, or the retroperitoneum behind the abdominal organs.

There are many subtypes, including liposarcoma, leiomyosarcoma, synovial sarcoma, angiosarcoma, and undifferentiated pleomorphic sarcoma. Each can behave differently and respond to different treatments. Gastrointestinal stromal tumors, or GISTs, usually follow a separate treatment pathway.

Soft tissue sarcoma differs from carcinoma, which begins in organs or their lining, and from sarcoma that begins in bone. Some soft tissue sarcomas can invade nearby structures or

spread elsewhere, often to the lungs. Assessment by a team experienced in sarcoma helps ensure that imaging, biopsy, and treatment are appropriately planned.

Most soft tissue lumps are not cancer. Benign fatty tumors, cysts, and other noncancerous conditions are more common. However, a growing, deep, firm, or unexplained mass should be examined by a healthcare professional.

Symptoms

Soft tissue sarcoma may not cause pain at first. The first sign is often a lump that gradually becomes larger. A tumor deep inside the body may grow before it can be seen or felt.

Possible symptoms include:

These symptoms can have many causes, and size alone cannot determine whether a mass is cancerous.

Arrange a medical appointment if a lump is growing, persistent, deep or fixed, returns after removal, or causes ongoing pain or loss of function. Imaging may be needed rather than attempting to identify it by touch alone.

Seek urgent medical advice for rapidly worsening swelling, new severe pain, weakness, or loss of feeling in a limb. Seek emergency care for severe breathing difficulty, coughing up a significant amount of blood, uncontrolled bleeding, fainting, or sudden severe chest pain.

- A new or enlarging lump
- Swelling or fullness near the tumor
- Pain, tingling, numbness, or weakness if the mass presses on nearby structures
- Reduced movement when a tumor is near a joint
- Abdominal pain, fullness, constipation, or increasing abdominal size
- Blood in vomit or stool when certain tumors affect the digestive tract
- Cough or shortness of breath if cancer has spread to the lungs

Causes and risk factors

In most people, the cause is unknown. Soft tissue sarcoma develops when genetic changes cause a cell to grow without normal control. Some subtypes have characteristic chromosome or gene changes, but these are usually limited to the tumor and are not inherited.

Risk factors include:

Soft tissue sarcoma can occur at any adult age. Diet, weight, and exercise do not explain most cases, and there is no standard screening test for adults at average risk.

Genetic counseling may be appropriate when sarcoma develops unusually early, a person has several primary cancers, or close relatives have a pattern of cancers suggesting an inherited syndrome. Counseling can clarify whether genetic testing may be useful and what results could mean for relatives.

- Previous radiation therapy: A sarcoma can rarely develop in previously treated tissue, usually many years later. The benefits of necessary radiation generally outweigh this risk.
- Inherited conditions: Li-Fraumeni syndrome, hereditary retinoblastoma, neurofibromatosis type 1, and other rare syndromes increase the risk of certain sarcomas.
- Long-standing lymphedema: Persistent swelling caused by poor lymph drainage is associated with a rare angiosarcoma.
- Some chemical exposures: Certain workplace exposures have been studied, although evidence varies by substance and tumor type.

Diagnosis

Assessment begins with a medical history and physical examination. The clinician will ask when the mass appeared, whether it is changing, and whether it causes pain, weakness, or numbness.

Imaging shows the mass's size, depth, location, and relationship to nearby nerves, blood vessels, bones, or organs. MRI is commonly used for tumors in an arm, leg, trunk, head, or neck. CT is often used for the chest, abdomen, or retroperitoneum. Ultrasound can distinguish a solid mass from a fluid-filled cyst and guide further testing.

A biopsy is needed to confirm sarcoma. A core needle biopsy removes narrow tissue samples through a hollow needle. An open biopsy is sometimes necessary. However, removing an unplanned mass before appropriate imaging can complicate later treatment.

Whenever possible, the biopsy should be planned with the sarcoma team that would perform definitive surgery. The needle path or biopsy scar may need to be removed with the tumor, so its position can affect the operation.

A pathologist examines the tissue and may use special stains and molecular tests to identify the subtype. Because classification is complex, review by a pathologist experienced in sarcoma may be valuable. The pathology report usually states the tumor type and grade, which helps estimate the risk of recurrence or spread.

Staging evaluates the tumor's size, location, grade, lymph nodes, and distant spread. Chest CT is often included because many sarcomas can spread to the lungs. Other tests depend on the subtype and symptoms.

Treatment and management

Treatment should be individualized by a multidisciplinary sarcoma team, which may include surgical, medical, and radiation oncologists, specialist pathologists and radiologists, rehabilitation clinicians, and nurses.

Surgery is the main treatment for many localized sarcomas. The goal is to remove the tumor with a rim of healthy tissue, called a clear or negative margin. Limb-sparing surgery is possible for most tumors in an arm or leg. Amputation is uncommon but may be considered if the tumor cannot otherwise be removed safely or the limb would not retain useful function.

Radiation therapy may be given before or after surgery to reduce local recurrence risk. Preoperative radiation may increase wound-healing problems, while postoperative radiation generally treats a larger area and may cause more long-term stiffness or swelling. Not every sarcoma requires radiation.

Chemotherapy may be considered for certain high-risk localized tumors, tumors that cannot be removed, or cancer that has spread. Its usefulness depends on the subtype, grade, location, previous treatment, and overall health.

Targeted medicines act on particular tumor changes or pathways and are useful only in selected subtypes. Immunotherapy also has a role in some situations but is not standard for every soft tissue sarcoma.

For cancer that has spread, treatment may aim to slow growth, relieve symptoms, and preserve quality of life. Options include systemic medicines, radiation, local treatment for limited metastases, and clinical trials. Palliative care can help manage pain, fatigue, and emotional stress at any stage; it is not limited to end-of-life care.

Physical or occupational therapy can support strength, movement, daily activities, and return to work. Treatment planning should also address fertility, sexual health, nutrition, transportation, and financial concerns when relevant.

Complications

A growing sarcoma can damage nearby muscles, nerves, blood vessels, bones, or organs, causing pain, weakness, reduced movement, bleeding, bowel or urinary problems, or swelling.

Cancer may return near the original site or spread to distant organs. Risk depends on the subtype, grade, size, location, and response to treatment.

Treatment complications may include:

Lymphedema may occur when lymph vessels or nodes are affected by surgery or radiation. Symptoms include persistent swelling, heaviness, tightness, or aching. Early assessment can provide access to compression, exercise, skin care, and specialist therapy.

Fear of recurrence and changes in mobility, body image, or employment can also affect well-being. Counseling, rehabilitation, support groups, and practical services may help.

- Infection, bleeding, numbness, reduced movement, or changes in appearance after surgery
- Skin irritation, fatigue, wound-healing problems, stiffness, swelling, or later tissue damage after radiation
- Changes in blood counts, digestion, nerves, fertility, or organ function from systemic medicines

Follow up

Follow-up is important because sarcoma can recur and treatment effects may appear later. The schedule depends on the subtype, grade, original site, stage, treatment, and time since therapy. Higher-risk tumors are usually monitored more closely during the first years.

Visits may include symptom review, examination of the original site, and imaging when the area is difficult to examine or recurrence risk warrants it. Chest imaging is often included because the lungs are a common site of spread.

Keep copies of the pathology report, surgery details, radiation plan, medicines received, and surveillance schedule. Report new symptoms rather than waiting for the next planned visit.

Contact the oncology team promptly for a new or growing lump, persistent unexplained pain, worsening swelling, reduced limb function, ongoing cough, or unexplained shortness of breath. These symptoms do not necessarily mean the cancer has returned, but they require assessment.

Long-term care may address mobility, lymphedema, heart and lung health, fertility, sexual health, and emotional well-being. Continue routine primary care, vaccinations, general health screening, and management of conditions unrelated to sarcoma.

Sources

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