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Soft Tissue Sarcoma Causes, Risk Factors, and Prevention

Learn about the risk factors for soft tissue sarcoma and if there are things you can do that might help lower your risk.

Risk Factors

A risk factor is anything that affects your chance of getting a disease such as cancer. Learn more about the risk factors for soft tissue sarcoma.

- [Risk Factors for Soft Tissue Sarcomas](#)
- [What Causes Soft Tissue Sarcomas?](#)

Prevention

The only way to prevent some soft tissue sarcomas is to avoid exposure to [risk factors](#) whenever possible. Still, most sarcomas develop in people with no known risk factors. At this time, there's no known way to prevent this cancer. And for people getting radiation therapy, there's usually little choice.

Risk Factors for Soft Tissue Sarcomas

- [Radiation given to treat other cancers](#)
- [Family cancer syndromes](#)

- [Damaged lymph system](#)
- [Chemicals](#)

A risk factor is anything that changes your chance of getting a disease like cancer. Different cancers have different risk factors. For example, unprotected exposure to strong sunlight is a risk factor for skin cancer. Smoking is a risk factor for cancers of the lung, and many other cancers. But risk factors don't tell us everything. Having a risk factor, or even many, doesn't mean that you will get the cancer. Also, many people get cancer without having a risk factor.

Injury and lifestyle factors such as smoking, diet, and exercise are NOT linked to the risk for soft tissue sarcoma . But the injury issue has caused some confusion in the past. One reason is that an injured area might swell. That swelling could look like a tumor, but it isn't one. Also, when you are injured, the pain may draw your attention to the injured area. A doctor may check the area, and x-rays or other imaging studies may

are born with (often inherited from a parent) that are linked to a high risk of getting certain cancers. Some family cancer syndromes increase a person's risk of developing soft tissue sarcomas.

Neurofibromatosis

Neurofibromatosis is also known as **von Recklinghausen disease**. It usually runs in families and causes many benign (not cancer) tumors that form in nerves under the skin and in other parts of the body (These are called **neurofibromas**.) It's caused by a defect (mutation) in genes called *NF1* and *NF2*. About 5% of people with neurofibromatosis will develop a sarcoma in a neurofibroma.

Gardner syndrome

Gardner syndrome is a disease caused by defects in the *APC* gene. This syndrome is a type of familial adenomatous polyposis (FAP), and people with it get many polyps in the colon (and intestines) and have a high risk of getting colon cancer . It also causes problems outside the colon, including desmoid tumors. (These are discussed in [What Is a Soft Tissue Sarcoma?](#)²)

Li-Fraumeni syndrome

Li-Fraumeni syndrome is caused by inherited defects in the *TP53* gene. People affected by this syndrome have a high risk of cancer, such as [breast cancer](#)³, [brain tumors](#)⁴, [leukemia](#)⁵, and sarcomas. Still, only 10 to 20 out of 100 people with Li-Fraumeni syndrome will develop a soft tissue sarcoma. People with this syndrome are sensitive to the cancer-causing effects of radiation. So if they have a cancer that's treated with radiation, they have a very high chance of developing a new

They also have an increased risk of cancer, including soft tissue sarcomas.

Gorlin syndrome

Gorlin syndrome is also called **nevroid basal cell carcinoma syndrome** (NBCCS). It's caused by defects in the *PTCH1* gene. People with this syndrome have a high risk of developing many [basal cell skin cancers](#)⁷. They also have an increased risk of fibrosarcoma and [rhabdomyosarcoma](#)⁸.

Tuberous sclerosis

Tuberous sclerosis can be caused by a defect in the *TSC1* and/or *TSC2* gene. People with this syndrome often have seizures and learning problems. They get benign (not cancer) tumors in many different organs. They also have kidney problems, often along with a kidney tumor called **angiomyolipoma**. People with tuberous sclerosis have an increased risk of rhabdomyosarcoma.

Damaged lymph system

Lymph is a clear fluid containing immune system cells that's carried throughout the body by a series of lymph vessels. These vessels connect lymph nodes (small bean-shaped collections of immune system cells). When lymph nodes have been removed or damaged by radiation therapy, lymph fluid can build up and cause swelling. This is called [lymphedema](#)⁹.

Lymphangiosarcoma (a malignant (cancer) tumor that develops in lymph vessels) is a very rare complication of chronic lymphedema.

Chemicals

Exposure to vinyl chloride (a chemical used in making plastics) is a risk factor for developing sarcomas of the liver, but it hasn't been proven to cause soft tissue sarcomas. [Arsenic](#)¹⁰ has also been linked to a type of liver sarcoma but not soft tissue sarcoma. Exposure to dioxin and to herbicides that contain phenoxyacetic acid at high doses (such as might occur in people who work on farms) may also be risk factors, but this isn't known for certain. There's no evidence that herbicides (weed killers) or insecticides, at levels encountered by the general public, cause sarcomas.

Hyperlinks

1. www.cancer.org/cancer/survivorship/long-term-health-concerns/second-cancers-in-adults.html
2. www.cancer.org/cancer/types/soft-tissue-sarcoma/about/soft-tissue-sarcoma.html
3. www.cancer.org/cancer/types/breast-cancer.html
4. www.cancer.org/cancer/types/brain-spinal-cord-tumors-adults.html
5. www.cancer.org/cancer/types/leukemia.html
6. www.cancer.org/cancer/types/retinoblastoma.html
7. www.cancer.org/cancer/types/basal-and-squamous-cell-skin-cancer.html
8. www.cancer.org/cancer/types/rhabdomyosarcoma.html
9. www.cancer.org/cancer/managing-cancer/side-effects/swelling/lymphedema.html
10. www.cancer.org/cancer/risk-prevention/chemicals/arsenic.html

References

American Society of Clinical Oncology. Nevoid Basal Cell Carcinoma Syndrome. 04/2016. Accessed at www.cancer.net/cancer-types/nevoid-basal-cell-carcinoma-syndrome on March 27, 2018.

American Society of Clinical Oncology. Sarcoma, Soft Tissue: Risk Factors. 08/2017. Accessed at www.cancer.net/cancer-types/sarcoma-soft-tissue/risk-factors on March 27, 2018.

American Society of Clinical Oncology. Tuberous Sclerosis Complex. 11/2016. Accessed at www.cancer.net/cancer-types/tuberous-sclerosis-complex on March 27, 2018.

American Society of Clinical Oncology. Werner Syndrome. 12/2016. Accessed at www.cancer.net/cancer-types/werner-syndrome on March 27, 2018.

European Society for Medical Oncology. Soft Tissue Sarcomas: A Guide for Patients. 2106. Accessed at <http://www.esmo.org/content/download/75509/1380040/file/ESMO-ACF-Soft-Tissue-Sarcomas-Guide-for-Patients.pdf> on March 27, 2017.

National Cancer Institute. Adult Soft Tissue Sarcoma Treatment (PDQ®)—Health Professional Version. February 1, 2018. Accessed at www.cancer.gov/types/soft-tissue-sarcoma/hp/adult-soft-tissue-treatment-pdq on March 27, 2018.

What Causes Soft Tissue Sarcomas?

Many family cancer syndromes have been found in which inherited DNA mutations cause a very high risk of developing breast, colon, kidney, eye, or other cancers. Some of these syndromes are also linked to an increased risk of developing soft tissue sarcomas. (These syndromes were noted in [Risk Factors for Soft Tissue Sarcomas](#)) The syndromes are caused by defects (mutations) in genes that can be inherited (passed on) from a parent. Some of these gene defects can be found through testing. For more on this, see [Family Cancer Syndromes](#)¹ and [Genetics and Cancer](#)².

DNA mutations in soft tissue sarcoma are common. But they're usually acquired during life rather than having been inherited before birth. Acquired mutations may result from exposure to radiation or cancer-causing chemicals. In most sarcomas, they occur for no apparent reason.

Researchers still don't know why most soft tissue sarcomas develop in people who have no apparent risk factors.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/genetics/family-cancer-syndromes.html
2. www.cancer.org/cancer/risk-prevention/genetics.html

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Can Soft Tissue Sarcomas Be Prevented?

The only way to prevent some soft tissue sarcomas is to avoid exposure to [risk factors](#)¹ whenever possible. But most sarcomas develop in people with no known risk factors, so, at this time, there's no known way to prevent most cases. And for people getting radiation therapy, there's usually little choice.

Hyperlinks
