CONDITION

Spinal chordoma

Spinal chordoma is a rare cancerous bone tumour that develops from early spinal tissue.

WHAT IT IS
Rare cancerous bone tumour arising along the spine

BODY SYSTEM
Bones and nervous system

MAIN SYMPTOMS
Back pain, numbness, weakness, bowel or bladder changes

WHAT CAUSES IT
Usually unknown; changes in notochord-derived cells

HOW IT IS DIAGNOSED
MRI and CT, confirmed by specialist-planned biopsy

MAIN TREATMENT
Specialist surgery, often with high-dose focused radiation

CAN IT BE CURED?
Sometimes - complete removal can be lasting

IS IT AN EMERGENCY?
Sometimes - new bladder loss or rapidly worsening weakness

LONG-TERM OUTLOOK
Often slow-growing, but recurrence may occur years later

Overview

A spinal chordoma is a rare cancerous tumour that grows in a bone of the spine. It begins in cells left over from the notochord, a structure that helps form the spine before birth. These leftover cells usually cause no problems, but rarely they develop into a chordoma.

Chordomas can occur anywhere along the spine. Many develop in the sacrum, the triangular bone at the bottom of the spine. Others grow in the movable vertebrae of the lower back, upper back, or neck. Chordomas can also occur at the base of the skull, but those are not usually described as spinal chordomas.

These tumours often grow slowly. Even so, they can damage bone and press on the spinal cord, nerve roots, or nearby organs. Their location can make complete removal difficult. They may also return in the same area after treatment, sometimes years later.

Spinal chordoma needs assessment by a specialist team experienced in bone sarcomas and spinal tumours. A sarcoma is a cancer arising from bone or connective tissue. Treatment planning before a biopsy or operation is especially important because the path taken through the tissue can affect later surgery.

Symptoms

Symptoms depend on where the tumour is, how large it has become, and which nerves or nearby structures are affected. Early symptoms can be vague and may resemble much more common back or neck conditions.

Persistent pain is common. It may be felt in the neck, back, tailbone, pelvis, or buttocks. Sacral pain may be worse when sitting. The pain may gradually become more constant or may not improve as expected with usual care.

Pressure on a nerve can cause symptoms along the path of that nerve, including:

A sacral chordoma may press on nerves controlling the pelvis. This can lead to constipation, difficulty passing urine, loss of bladder or bowel control, or changes in sexual function. Some people notice a lump near the lower spine or feel pressure in the rectum.

These symptoms do not necessarily mean you have a chordoma. Disc problems, arthritis, injuries, and other conditions are far more common. Symptoms that persist, progress, or include nerve problems need medical assessment.

- Pain spreading into an arm or leg
- Numbness, tingling, or reduced sensation
- Weakness or difficulty walking
- Changes in balance or coordination

Causes and risk factors

A chordoma develops from notochord cells that remain after early development. Researchers have identified changes in genes involved in how these cells grow, including a gene called TBXT , which helps control notochord development. In most people, the relevant changes appear only in the tumour cells and are not inherited.

Very rare families have had more than one person with chordoma, sometimes linked to an extra copy of TBXT. Most people with spinal chordoma do not have a family history, and their relatives are not considered likely to develop it.

There is no evidence that a chordoma is caused by an injury, posture, exercise, or something you did. No established lifestyle factor is known to cause it. Chordoma is diagnosed more often in adults than children, but it can occur at different ages.

Diagnosis

Diagnosis usually starts with imaging. Magnetic resonance imaging, or MRI, shows the tumour's relationship to the spinal cord, nerves, muscles, and other soft tissues. Computed tomography, or CT, gives more detail about damage to the bone and may help with surgical planning.

Imaging can strongly suggest chordoma, but it usually cannot confirm the exact tumour type. Other bone tumours can look similar. Confirmation requires a biopsy, in which a small tissue sample is removed and examined by a specialist pathologist.

The biopsy should be planned by the team that would carry out definitive treatment. The needle path may need to be removed during later surgery because tumour cells can occasionally be left along it. An unplanned biopsy or operation can make complete removal more difficult.

Under a microscope, chordoma cells have characteristic features. Pathologists may use laboratory stains for proteins such as brachyury, which is produced from the TBXT gene, to support the diagnosis.

Further scans may check whether the tumour has spread and provide a baseline for follow-up. These may include imaging of the chest because the lungs are one possible site of spread. Your team may also test nerve function and assess bowel, bladder, or walking problems.

Treatment and management

Treatment is planned around the tumour's location, size, previous treatment, and relationship to important nerves, blood vessels, and organs. Care is best coordinated through a specialist sarcoma team with spinal surgeons, radiation oncologists, radiologists, pathologists, rehabilitation professionals, and other specialists as needed.

Surgery is generally the main treatment when the tumour can be removed safely. The preferred approach is often to remove the tumour in one piece with a rim of healthy tissue around it. This is called an en bloc resection with a clear margin . Clear margins lower the chance of leaving tumour cells behind, but they may not be possible when a tumour surrounds critical nerves or blood vessels.

Spinal surgery can be extensive. Part of the spine may need reconstruction or stabilisation. For sacral tumours, the nerves involved in bladder, bowel, leg, or sexual function must be considered carefully. The team should explain the likely benefits, possible loss of function, and alternatives before treatment.

Chordoma cells are relatively resistant to standard radiation doses. When radiation is used, treatment usually needs to deliver a high dose while limiting exposure to the spinal cord and nearby organs. Techniques may include proton therapy, carbon-ion therapy where available, or highly focused photon radiation. Radiation may be considered after surgery, when complete removal is not possible, or for a tumour that has returned.

Traditional chemotherapy has limited activity against chordoma. For advanced or unresectable disease, specialists may consider targeted medicines, other systemic treatments, or a clinical trial. These treatments are more likely to control or slow the tumour than remove it completely.

Supportive care is part of treatment at every stage. It may include pain management, physiotherapy, mobility aids, bowel or bladder support, sexual health care, and help coping with the emotional effects of a rare cancer.

Complications

A spinal chordoma can weaken vertebrae and affect the stability of the spine. It can also compress nerve roots, the spinal cord, or the bundle of lower spinal nerves called the cauda equina. Lasting weakness, altered sensation, pain, or loss of bowel and bladder function may occur if nerves are severely damaged.

The most important long-term complication is local recurrence, meaning the tumour grows again in or near the treated area. Recurrence may be harder to treat because of scar tissue, previous radiation, or further involvement of nerves and organs.

Chordoma can spread to other parts of the body. Possible sites include the lungs, bones, liver, lymph nodes, and soft tissues. Spread is more often associated with recurrent or advanced disease, but local tumour control remains a major concern.

Treatment itself can have lasting effects. Depending on the spinal level and operation, these may include reduced mobility, chronic pain, changes in bladder or bowel control, sexual difficulties, wound problems, or reduced spinal stability. Focused radiation reduces exposure to healthy tissue but cannot remove all risk of nerve, bone, or organ injury.

Prevention

There is no known way to prevent spinal chordoma. It arises from developmental cell remnants and is not linked to a proven avoidable exposure or behaviour.

Routine screening is not recommended for the general population. In the very unusual situation where several close relatives have had chordoma, a genetics service can assess the family history and discuss whether testing or monitoring is appropriate.

After treatment, follow-up imaging is not prevention, but it can find regrowth before it causes major symptoms. Keeping scheduled scans is important even when you feel well.

Living with it and what to expect

Spinal chordoma often develops slowly, but its course is not predictable from growth rate alone. A tumour may remain controlled after surgery and radiation, or it may return locally. Recurrence can happen several years after treatment, so follow-up commonly continues for the long term.

Follow-up usually includes examination and repeated imaging of the treated area. Chest or other scans may be used to look for spread. The timing and type of scans are based on the tumour's location, treatment, and previous findings.

Recovery after spinal surgery may take months. Rehabilitation can help rebuild strength, adjust to changes in movement, and find practical ways to manage daily activities. Some people return to work and usual routines, while others need lasting changes because of pain, fatigue, reduced mobility, or nerve problems.

Bowel, bladder, or sexual changes can be difficult to discuss, but they are recognised effects of sacral nerve involvement. Specialist continence, rehabilitation, pain, and sexual health services may help. Emotional support can also be useful, particularly because living with a rare tumour and long-term scan follow-up can create uncertainty.

New symptoms do not always mean the chordoma has returned. However, persistent or worsening pain, a new lump, weakness, numbness, or changes in bowel or bladder function should be reported rather than left until the next routine appointment.

When to get medical help

Arrange a routine medical assessment if you have persistent focal back, neck, tailbone, or pelvic pain that is getting worse or not improving. New numbness, tingling, weakness, a growing lump, constipation, or changes in urination also need assessment.

If you have been treated for chordoma, contact your specialist team promptly about new or progressive symptoms, even between planned follow-up visits.

Seek urgent medical help for:

These symptoms can indicate spinal cord or cauda equina compression. They require emergency assessment because delayed treatment may increase the risk of permanent nerve damage.

- New difficulty passing urine or sudden loss of bladder or bowel control
- Numbness around the genitals, buttocks, or inner thighs
- Rapidly worsening weakness in one or both legs
- New inability to walk or marked loss of balance
- Severe spinal pain following a minor injury, especially with weakness or numbness

Common questions

Is spinal chordoma a type of cancer?

Yes. Chordoma is a malignant bone tumour, meaning it can invade nearby tissue and sometimes spread elsewhere. It often grows more slowly than many cancers, but its position beside nerves and organs makes it medically important.

Can spinal chordoma be cured?

Sometimes. Long-lasting control or cure may be possible when the tumour can be completely removed with an adequate margin, often with specialist radiation. Complete removal is not always safe or possible, and recurrence can occur even after apparently successful treatment.

How quickly does a spinal chordoma grow?

Many chordomas grow slowly over months or years. Growth rate differs between tumours, and a slow-growing tumour can still damage nerves or bone. Changes on scans and symptoms are more useful than assumptions about how chordomas usually behave.

Can a biopsy make chordoma spread?

A properly planned needle biopsy is necessary to confirm the diagnosis. Tumour cells can occasionally contaminate the biopsy path, so specialists choose a route that can be removed during surgery. This is why biopsy should be arranged through the team planning definitive treatment.

Does spinal chordoma spread to other organs?

It can, particularly when disease is recurrent or advanced. The lungs are one possible site, and

spread can also involve other bones, the liver, lymph nodes, or soft tissues. Follow-up scans are used to look for both local recurrence and distant spread.

Will spinal chordoma affect walking or bladder control?

It may if the tumour or its treatment affects the spinal cord or nerves. The risk depends on the tumour's level and which nerves are involved. Rehabilitation, mobility support, and bladder or bowel services can help manage lasting changes.

Sources

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