

Case Report

Case Report: A Ten-Year Misdiagnosis of Chest Wall Neurofibroma

Chen Jianliang^{1*}, Fu Jun¹, Si Wen¹, Liu Lianchun¹, Li Ruixiang¹, Yu Chengfu² and Wang Jiangtao²

¹Department of Neurosurgery, Shenzhen Lansheng Brain Hospital, China

²Department of Radiology, Shenzhen Lansheng Brain Hospital, China

Abstract

Chest wall neurofibroma is a benign tumor derived from intercostal nerve fibers, characterized by diverse clinical manifestations and frequent misdiagnosis. This article presents a case of chest wall neurofibroma that was misdiagnosed for a period of ten years. Through detailed clinical analysis, the diagnosis was eventually confirmed, and the tumor was completely resected using microsurgery, resulting in a full recovery for the patient.

Keywords: Neurofibroma; MRI

Case Presentation

The patient was a 61-year-old female who experienced radiating pain from the right lumbar region to the right abdomen for ten years. She sought medical attention multiple times and underwent CT and MRI scans at various hospitals, which led to treatments based on the diagnosis of disc herniation and spinal stenosis, both in traditional Chinese and Western medicine, with poor outcomes. Recently, the patient's pain worsened, especially during coughing and deep breathing, prompting her to visit our hospital in March 2024.

Upon careful inquiry into her medical history, the patient's pain was primarily a stabbing pain around the waist, exacerbated by deep inhalation. In recent years, the patient's backpack would frequently slip off her right shoulder. Examination revealed a discrepancy in length from the top of the head to the soles of the feet: 161 cm on the left and 158 cm on the right, suggesting the possibility of scoliosis. Physical examination found tenderness 3 cm to the right of the lumbar vertebrae, and the patient screamed in pain for about 20 seconds after percussion, describing it as unbearable. The authors considered such intense percussion pain indicative of nerve root irritation, neurofibroma cannot be ruled out. A thoracolumbar CT scan was requested (Figures 1-4).

After repeated joint review of the imaging by the radiology department and the authors, a flat tumor was identified adjacent to the 11th and 12th thoracic vertebrae, measuring approximately 4 × 4 × 3 cm³, spindle-shaped and attached to the thoracic wall underneath the T11 and T12 ribs, with the proximal end closely adjacent to the transverse process of T11, tentatively diagnosed as a neurofibroma.

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***Corresponding author:** Chen Jianliang, Department of Neurosurgery, Chief physician and professor of Neurosurgery, Shenzhen Lansheng Brain Hospital, Longhua District, Shenzhen City, Guangdong Province, Shenzhen, China, Tel: +86-13902974061

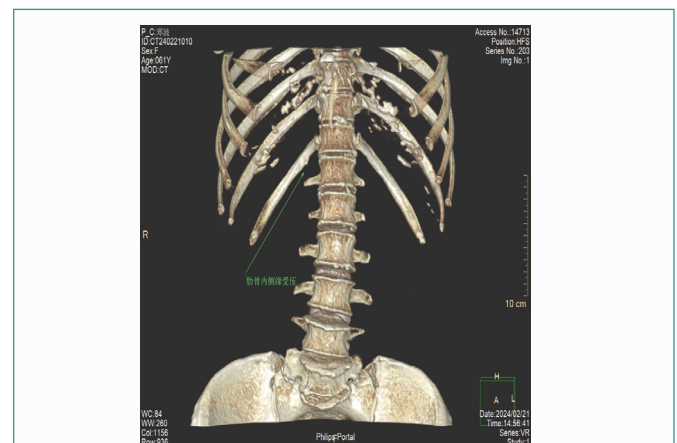


Figure 1: Preoperative CT 3D, underdeveloped T12 ribs There is arc compression at the near transverse process position showing compression of the internal margin of the rib.



Figure 2: Preoperative CT oblique of T11 ribs.

Under general anesthesia, neurosurgeons performed a paraspinal tumor resection for the patient. Intraoperatively, in a prone position, an 8 cm long straight incision 3 cm lateral to the thoracolumbar vertebrae was made. The tumor was separated from the muscle and the space adjacent to the spine without damaging muscle fibers. Intraoperative

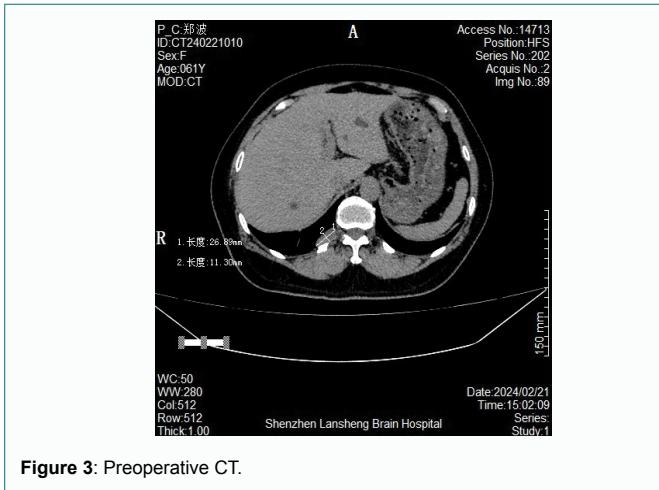


Figure 3: Preoperative CT.

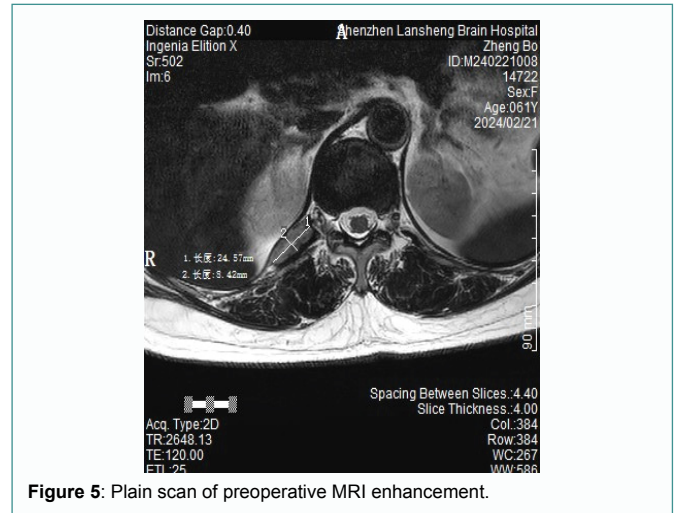


Figure 5: Plain scan of preoperative MRI enhancement.

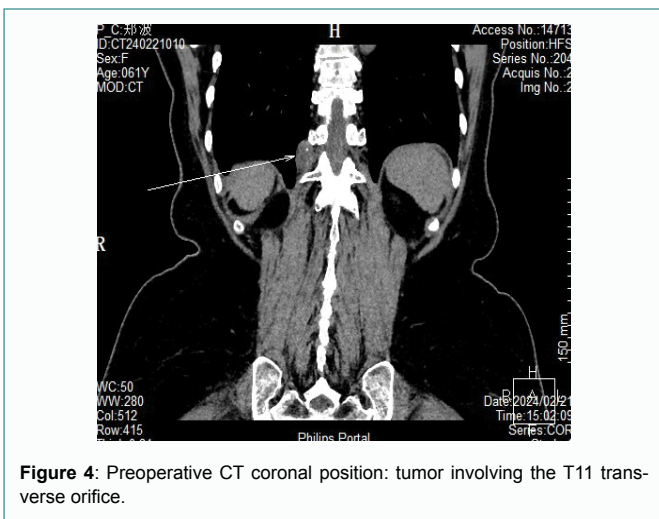


Figure 4: Preoperative CT coronal position: tumor involving the T11 transverse orifice.

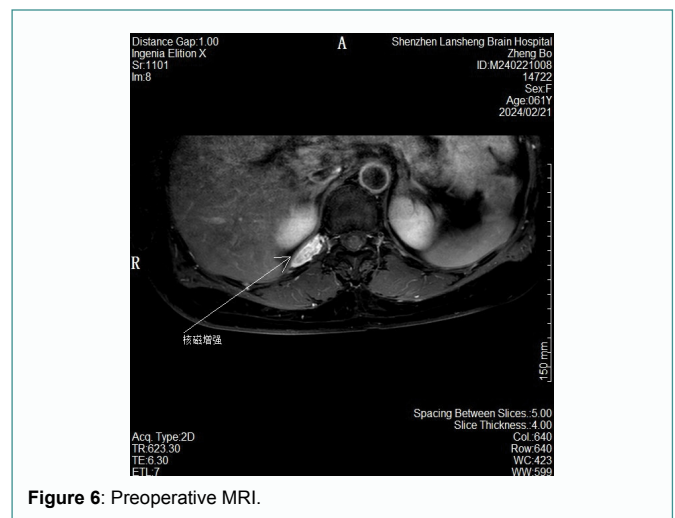


Figure 6: Preoperative MRI.

C-arm X-ray was used for repositioning, and after confirming the affected segment, 5 cm of the T11 rib was removed with a rongeur. Under surgical microscopic, a spindle-shaped mass was observed protruding from the thoracic wall after the removal of the T11 rib. Attempts were made to dissect the tumor under the microscope to preserve the pleura, but it was found that the tumor had penetrated the thoracic wall, making it impossible to separate the tumor from the chest wall. Even after the transverse process was removed, the tumor boundary was not visible. Eventually, the microscope was used to further enlarge the resection, removing the transverse process and part of the lamina until the normal dura mater was clearly visible. The tumor and pleura were removed together at the edge of the tumor, measuring 4 × 4 × 3 cm. The pathological report confirmed it as a neurofibroma. After resection, the lungs, diaphragm, and liver were visible. No significant air leakage was observed after saline irrigation of the surgical field. The soft tissues were tightened, the pleura were sutured, the muscles were repositioned, and the incision was closed to complete the surgery (Figure 5-8).

Postoperatively, the patient's thoracic wall pain disappeared, and percussion pain was no longer present. She experienced intermittent gastrointestinal bloating and discomfort, which improved with symptomatic treatment. Two weeks later, the sutures were removed. Postoperative follow-up showed a good recovery with no signs of recurrence.

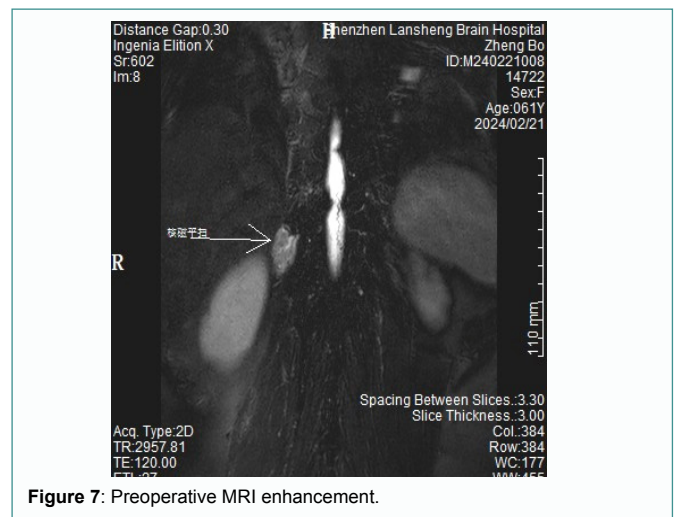


Figure 7: Preoperative MRI enhancement.

Literature Review and Discussion

Chest wall neurofibroma is a rare benign tumor that often leads to misdiagnosis and delayed treatment due to its diverse and nonspecific clinical manifestations [1,2]. Literatures reported cases of chest wall neurofibroma commonly present as local masses and pain, with some patients experiencing accompanying neurological dysfunction.

In terms of diagnosis, imaging examinations play a crucial role. Ultrasound, CT, and Magnetic Resonance Imaging (MRI) each have their advantages in the diagnosis of chest wall neurofibroma [3-11]. Among them, MRI is highly valuable in the diagnosis of chest wall neurofibroma due to its high resolution and multi-sequence imaging capabilities for soft tissue. However, the varied growth patterns and clinical presentations of chest wall neurofibroma often lead to misdiagnosis and delayed treatment. In this case, the patient sought medical attention for ten years due to persistent lumbar back pain. Multiple hospitals from different specialties conducted CT and MRI scans, but failed to provide a definite diagnosis, suggesting the atypical imaging features of this disease. Through careful inquiry into the patient's medical history and physical examination, it was eventually discovered that the patient, who happened to be a friend of the author, had significant tenderness and pain upon palpation in the right lumbar and abdominal region. This raised suspicion of neurofibroma, leading to the request for further imaging examinations, ultimately confirming the diagnosis as chest wall neurofibroma. This case highlights the importance of enhancing awareness of chest wall neurofibroma in clinical practice, emphasizing the clinical manifestations of nerve root pain, and promoting diagnostic consciousness for this condition (Figure 9-12).

Surgical resection is the preferred treatment for chest wall neurofibroma [12-15]. Literature reports indicate that complete tumor removal, along with surrounding tissues, effectively reduces the recurrence rate. For tumors that cannot be completely excised, adjuvant radiotherapy may be considered. It has been reported that chest wall neurofibromas are often diagnosed and operated on by thoracic surgeons. However, when the tumor involves the transverse process and intervertebral foramen, thoracic surgeons are concerned about the risk of spinal cord injury and may not completely remove the tumor, leading to recurrence and subsequent multiple surgeries. To reduce the risk of recurrence, some thoracic surgeons invite neurosurgeons to perform joint operations, followed by postoperative radiotherapy. In this case, the neurosurgeon performed tumor resection under a microscope, facilitating complete tumor removal and minimizing tissue and organ damage, thereby promoting the patient's early recovery. However, as the postoperative period for this patient is still relatively short, it requires long-term follow-up to determine the occurrence and timing of recurrence.

In terms of treatment, surgical resection is the preferred treatment for chest wall neurofibroma [12-15]. Reports in the literature show that complete resection of the tumor and part of the surrounding tissue can effectively reduce the recurrence rate. For tumors that cannot be completely removed, adjuvant radiotherapy may be considered. Literature reports, chest wall neurofibroma often diagnosed and surgery by the thoracic surgeons, intraoperatively, for involvement of the transverse hole of neurofibroma, thoracic surgeons worry injury spinal cord, often failed to transverse hole near the tumor resection, lead to recurrence need multiple operations, to reduce recurrence, a thoracic surgeons often invited neurosurgeon joint surgery, or supplementary radiotherapy used after surgery. In this case, the neurosurgeon performed tumor resection under the microscope, which was conducive to the total resection of the tumor and the reduction of tissue and organ damage can be o, thus promoting the early recovery of the patient. However, because it was not long after surgery, whether and when recurrence of the tumor, needed a long time to be further follow up (Figure 13).

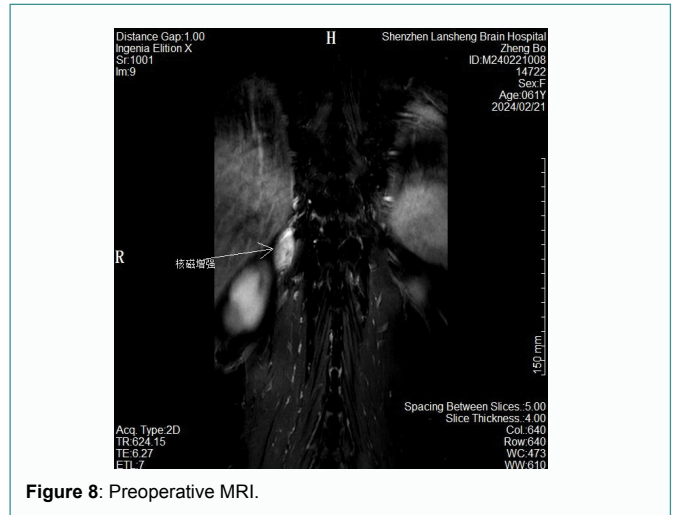


Figure 8: Preoperative MRI.

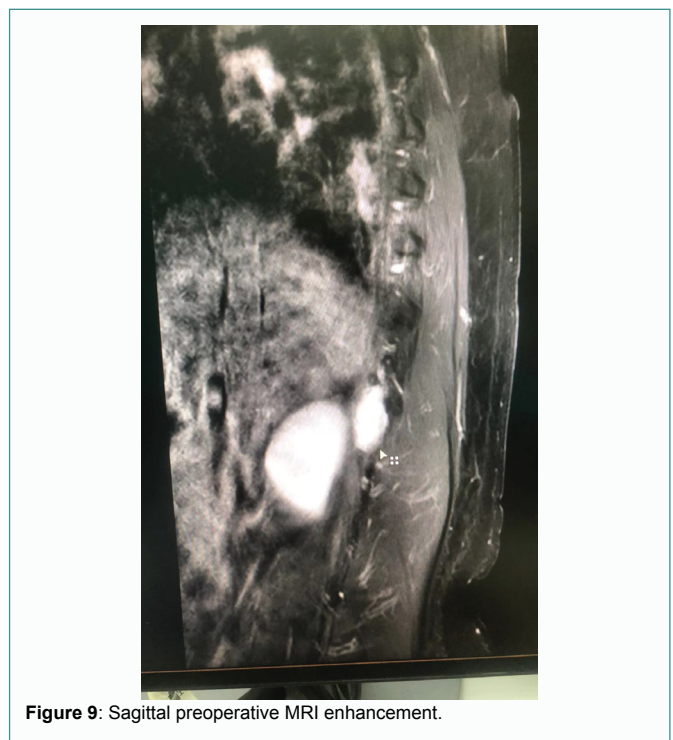


Figure 9: Sagittal preoperative MRI enhancement.

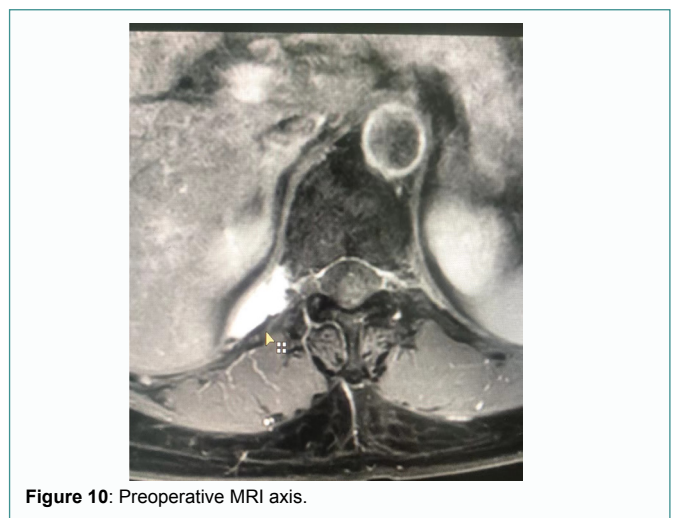


Figure 10: Preoperative MRI axis.

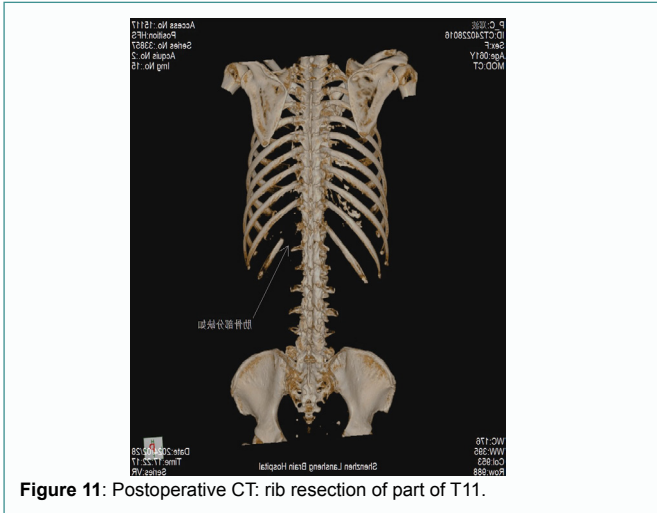


Figure 11: Postoperative CT: rib resection of part of T11.

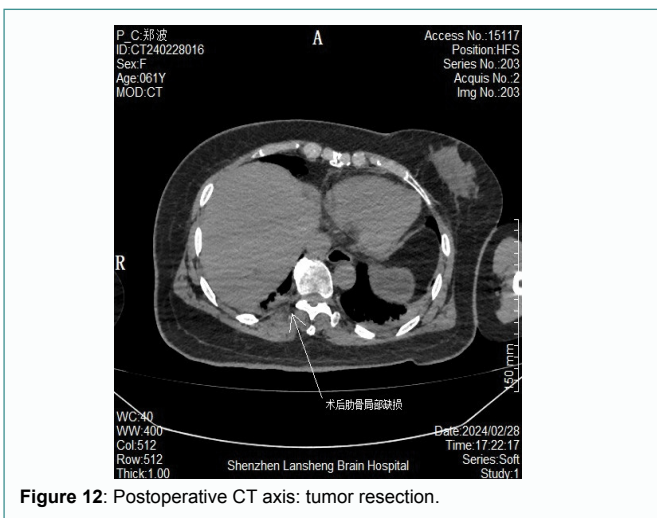


Figure 12: Postoperative CT axis: tumor resection.

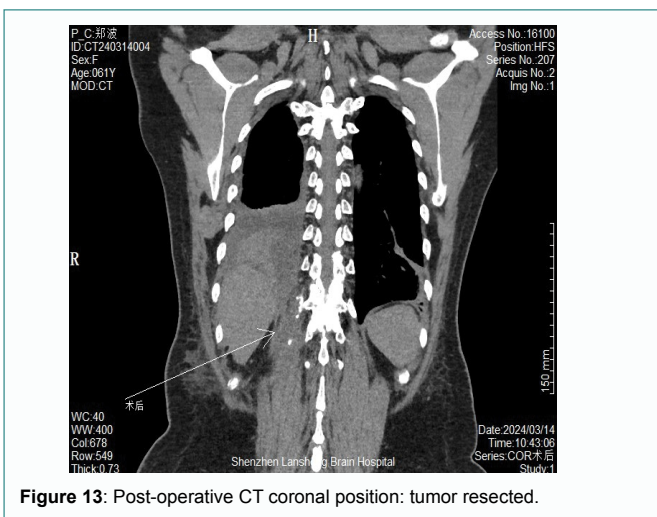


Figure 13: Post-operative CT coronal position: tumor resected.

The reasons for the 10-year delay in obtaining a definitive diagnosis in this case are multifactorial. Early symptoms of chest wall neurofibroma are often atypical, and imaging findings may only show thickening of the pleura, making it difficult for radiologists to identify the tumor. Even after undergoing a CT scan at our hospital, the tumor was not detected by the radiologist at the first view. It was the neurosurgeon who suggested repeated review of the images with

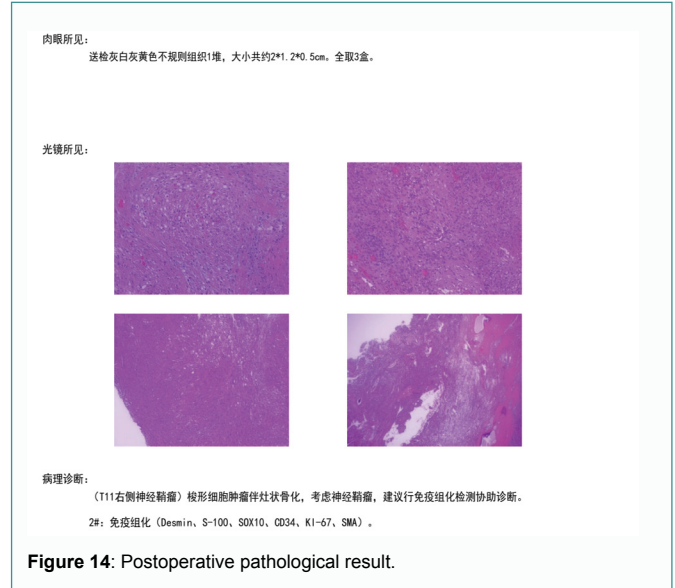


Figure 14: Postoperative pathological result.

the radiologist, leading to the discovery of the lesion. This case also emphasizes the importance of paying attention to clinical complaints and physical examinations in clinical practice. The diagnosis in this case was made based on the patient's significant tenderness upon percussion and a firm belief in the presence of a nerve root tumor, which prompted repeated image reviews with the radiologist and eventually resulted in a definitive diagnosis. Therefore, we should highly value patients' medical history, clinical manifestations, and comprehensive analysis of imaging examinations, and not overlook routine clinical examinations despite the availability of advanced imaging techniques. Specialist physicians should personally review images together with radiologists to improve diagnostic accuracy (Figure 14).

Conclusion

This case report discusses a patient who was misdiagnosed with a chest wall neurofibroma for ten years. An accurate diagnosis was eventually established through clinical analysis and careful imaging examination. The neurosurgeon, using a microscope, removed part of the ribs and thoracic transverse processes to completely excise the tumor. Following the surgery, the patient's pain disappeared, and they were able to stand straight with equal length from the top of the head to the soles of the feet within two weeks. The use of microscopic surgery by neurosurgeons is advantageous as it allows for better visualization of tumor boundaries, leading to complete removal of the tumor, reducing the chances of recurrence, and minimizing damage to the lungs and surrounding tissues, thus promoting the patient's swift recovery. This case highlights the importance of clinical presentation and thorough clinical analysis in diagnosing diseases and serves as a reminder to enhance our understanding and diagnostic awareness of chest wall neurofibromas in clinical practice.

In conclusion, the diagnosis and treatment of chest wall neurofibroma require comprehensive consideration of clinical symptoms, physical examinations, and imaging findings to facilitate early diagnosis and appropriate treatment.

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Supplement File

News Report Related to the Case

The rehabilitation of patients with schwannoma: ten years of pain, a good medical solution! Shenzhen Lansheng Brain Hospital 2024-03-28 14:38 Guangdong.

Ten years ago, Aunt Zhou was diagnosed with "lumbar disc herniation and spinal stenosis" due to low back pain. After many years of medical treatment, fruitless. In recent years, the pain has worsened to Aunt Zhou, and even shortened her right leg by two centimeters. It was not until this spring that she found the neurosurgery department of Shenzhen Lansheng Brain Hospital that she finally found out the real pain "culprit"- schwannoma, and accurately removed the tumor through surgery. Now, Aunt Zhou is getting back to a normal life. Full of gratitude, she wrote down her healing feelings. The following is aunt Zhou's self-statement.

I am a retired cadre, this year has been 60 years old. Ten years ago, I began to feel biting pain in my back. As my condition got worse, I embarked on a long way to seek treatment in many major hospitals in Shenzhen. I have visited several third-grade a hospitals and specialized hospitals, visited several experts and professors, and have experienced numerous CT, MRI and color ultrasound examinations. I always believe that I have a "herniated lumbar disc and spinal stenosis", but despite the changing medical skills, I still feel that the road to treatment is bumpy. The pain is increasing, I can't sleep, and even the Japanese plaster can only temporarily relieve. Over the years, my body posture has changed, shortening my right leg by two centimeters. But the strange thing is that I can still drive out for a long time when the pain decreases slightly. However, after the Spring Festival this year, the pain became more and more severe, and even affected the abdomen, and I had to stay at home. Until we learned that Professor Chen Jianliang, a neurosurgical expert in Shenzhen Lansheng Brain Hospital, had rich experience in neuropathic pain, and we decisively decided to ask him for treatment. Professor Chen gently tapped me on my waist, and I jumped up in pain. He immediately considered a tumor with nerve involvement, immediately applied for CT and magnetic resonance, carefully watched my CT and nuclear magnetic imaging, diagnosed my schwannoma of chest 11, and decided to take surgical treatment. In order to make accurate diagnosis, Director Yu Chengfu and technician Wang Jiangtao of the radiology department used multiple series to carefully read the film and make the diagnosis. Because the tumor is a flat type of neurofibroma, from the transverse process to the ribs, infiltration to the pleura, if not cured, it is easy to relapse. Moreover, the transverse process is close to the spinal canal, a little careless will cause spinal cord injury, paralysis. In order to prevent spinal cord injury and fail to completely remove the tumor, resulting in multiple recurrence and operations, the neurosurgery team of Lansheng Brain Hospital repeatedly determined the scope of the ribs and transverse process under the microscope, so as to fully remove the tumor without over-removing the ribs and vertebrae. Because of my 12th rib mutation, the radiology department and ultrasound department repeatedly defined the position during the operation to ensure the accuracy of the operation. With his rich experience and superb medical skills, Professor Chen successfully removed the tumor from my body. I was deeply moved by his professional dedication and considerate attitude towards patients. After the operation, under the careful care of the neurosurgery medical team of Lansheng Hospital, I recovered quickly and have returned to a normal life after leaving the hospital. The illness that has plagued me for many years was finally relieved.

We tried to express our gratitude with red envelopes, but the doctors handed them directly to the hospital as hospitalization expenses. This noble medical ethics and careful service moved me deeply. Now, I have recovered smoothly, ten years of illness once relieved. I want to praise Lansheng Brain Hospital. Their fine management, superb medical technology, noble medical ethics and careful service let me feel the warmth and hope of the world. Here, I sincerely wish Lansheng Brain Hospital better and better and bring health and hope to more patients.