

Acute progressive neurological decline in an elderly man

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ABSTRACT

The patient was an 88-year-old man referred to a physical therapist by his primary care physician for a 1-week history of severe neck pain of insidious onset. Based upon the history and physical examination, the physical therapist concluded that the patient's neck pain was mechanical in nature. Initial physical therapist intervention included cervical taping, cervical collar use and instruction in home exercise. At his follow-up visit 4 days after his initial physical therapy visit, the patient reported no improvement. The patient's son, who accompanied him to this visit, also reported that his father had a recent onset of fever and mild confusion. The case was discussed with the patient's physician and it was recommended that the patient report to the emergency department. Evaluation in the emergency department revealed that the patient was febrile with diminished oxygen saturation and an elevated white blood cell count. Chest radiographs were consistent with pneumonia and blood cultures were positive for methicillin-resistant *Staphylococcus aureus*. The patient was hospitalized and over the next 6 days, his condition progressively declined and quadriplegia below the C4 myotomal level developed. Magnetic resonance imaging of the cervical spine revealed severe cervical central canal stenosis with extensive signal abnormality in the cervical cord, as well as diffuse oedema in the perivertebral soft tissues that was consistent with a retropharyngeal abscess. Despite medical management, the patient subsequently succumbed to the complications of pneumonia and quadriplegia.

KEYWORDS: retropharyngeal abscess; cervical myelopathy; quadriplegia

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Introduction

Neck pain is a common condition for which patients routinely seek medical intervention. Although a specific pathoanatomical source cannot be routinely identified in most patients with mechanical neck pain, a low number of patients may have a serious underlying medical condition that may be causing their neck pain, which would warrant specialist referral (Table 1).¹ Therefore, while it is rare that neck pain is caused by serious medical disease, it is still important for providers to understand how to identify patients for whom specialist referral may be appropriate. This case report describes the clinical history of a patient who was referred to a physical therapist for the evaluation and treatment of acute neck pain, but subsequently experienced acute progressive neurological decline.

Case Report

The patient was an 88-year-old man referred to a physical therapist by his primary care physician for a 1-week history of severe neck pain of insidious onset. He was seen by his primary care physician 3 days before the initial physical therapy evaluation. The patient had an extensive prior history of intermittent neck pain that initially began following a motor vehicle accident 40 years ago. He reported that his current symptoms were similar to those of previous episodes; however, this episode was greater in pain intensity and the symptoms were more constant; the only easing factor was taking Vicodin. The patient reported that his neck pain from this current episode was worst at the end of day and into the night, and he was waking four to five times per night due to the pain.

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He also reported difficulty swallowing and a 4.5-kg weight loss in the last 2 months, which were attributed to a recent case of bronchitis, which required hospitalisation. Due to the deconditioning associated with his recent hospitalisation, the patient required the use of a front-wheeled walker for ambulation. The patient denied having fever, chills or sweats. The patient's past medical history is presented in Table 2.

The patient was alert and oriented and he followed all commands. Postural evaluation revealed a marked forward head. Physical examination revealed substantially decreased cervical range of motion in all planes, with a general reluctance to move due to pain, an inability to achieve greater than 90 degrees of shoulder flexion bilaterally, normal reflexes and normal upper extremity strength. Hoffman reflex

Table 1. Key signs and symptoms associated with serious pathological neck conditions (adapted from Childs et al.¹ with permission from Journal of Orthopaedic & Sports Physical Therapy and Military Medicine)

Cervical myelopathy	Inflammatory or systemic disease	Upper cervical ligamentous instability	Vertebral artery insufficiency	Neoplastic conditions	Fracture
<ul style="list-style-type: none"> - Multisegmental weakness or sensory changes - Sensory disturbance of the hands - Muscle wasting of hand intrinsic muscles - Unsteady gait - Hyperreflexia - Hoffman reflex - Babinski reflex - Clonus - Bowel and bladder disturbances 	<ul style="list-style-type: none"> - Temperature >100°F - BP >160/95 mmHg - Resting pulse >100 bpm - Resting respiration >25 bpm - Altered mental status/confusion in the elderly - Fatigue - Systemically unwell 	<ul style="list-style-type: none"> - Occipital headache and numbness - Severe limitations during assessment of neck active range of motion - Signs and symptoms of cervical myelopathy 	<ul style="list-style-type: none"> - Drop-attacks - Dizziness - Dysphagia - Dysarthria - Diplopia - Positive cranial nerve signs 	<ul style="list-style-type: none"> - Age over 50 years - Previous history of cancer - Unexplained weight loss - Constant pain, no relief with bed rest - Night pain 	<ul style="list-style-type: none"> - Age >65 years - Trauma - Prolonged use of corticosteroids - Severe limitations during assessment of neck active range of motion - Positive neurologic signs

Table 2. Patient's past medical history

Diagnosis	Time of onset	Medication/treatment
Stasis ulcers of bilateral lower extremities: methicillin-resistant <i>Staphylococcus aureus</i> positive	10 months prior	Wound dressed daily by nursing wound specialist
Chronic bronchitis/pneumonia	3 episodes in past 18 months	Prednisone, Doxycycline, and Albuterol and Atrovent inhalers
Hypocholesteremia	5 years prior	Lovastatin
Glaucoma: left eye blindness	8 years prior	None
History of myocardial infarction	8 years prior	Metoprolol, Nitroglycerine, Isosorbide and Mononitrate
Peripheral vascular disease	10 years prior	
History of congestive heart failure	18 years prior	
Stable angina pectoris	18 years prior	
Coronary artery disease	25 years prior	
Post-phlebotic syndrome with chronic bilateral lower extremity oedema	10 years prior	None
Prostate cancer	12 years prior	Prostatectomy and radiation therapy
Deep vein thrombosis and pulmonary embolism	25 years prior	Warfarin
History of smoking	30+ years prior	Ceased smoking 30 years ago
Asbestos exposure	40+ years prior	Ceased asbestos exposure 40 years ago
Cervical osteoarthritis	40 years prior	Vicodin

was negative bilaterally. Tenderness to palpation was noted in the C3–6 region bilaterally.

Initial physical therapist intervention included cervical taping, cervical collar use and instruction in home exercise. Given the severity and irritability of the patient's neck pain, cervical taping and a cervical collar were used in combination in an effort to maximally offload the affected tissues. At his follow-up visit 4 days after his initial physical therapy visit, the patient reported no improvement. The patient's son, who accompanied him to this visit, also reported that his father had a recent onset of fever and mild confusion. The case was discussed with the patient's physician, conventional radiographs were ordered (Figure 1) and the patient was referred/directed to the emergency department by the physical therapist.

Evaluation in the emergency department revealed that the patient was febrile (100.8°F) with diminished oxygen saturation (86%) and an elevated white blood cell count (20.4×10^9 per L) and erythrocyte sedimentation rate (108 mm/h). Chest radiographs were consistent with pneumonia and blood cultures were positive for methicillin-resistant *Staphylococcus aureus*. The patient was hospitalised and started on antibiotics intravenously. However, over the next 6 days, the patient's condition progressively declined and quadriplegia below the C4 myotomal level developed. Magnetic resonance imaging of the cervical spine revealed severe cervical central canal stenosis with extensive signal abnormality in the cervical cord, as well as extensive perivertebral soft tissue oedema that was consistent with a retropharyngeal abscess (Figure 2). At this point, the patient was ventilator-dependent. After discussion with the patient and his family, a tissue culture or surgery was not performed. The patient subsequently succumbed to the complications of pneumonia and quadriplegia.

Discussion

While most patients with neck pain have signs and symptoms that may be attributed to musculoskeletal dysfunction for which conservative management is indicated, the possibility of serious underlying medical disease presenting as a musculoskeletal condition should always be

Figure 1. Cervical spine radiographs revealing disc space narrowing and anterior osteophyte formation best identified on the lateral view (right)

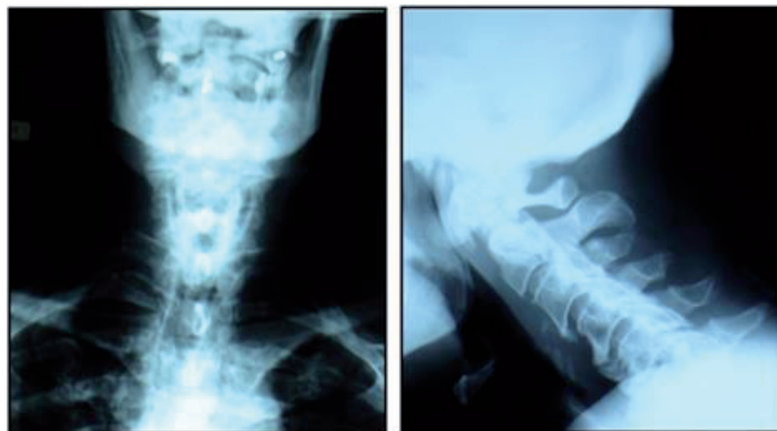
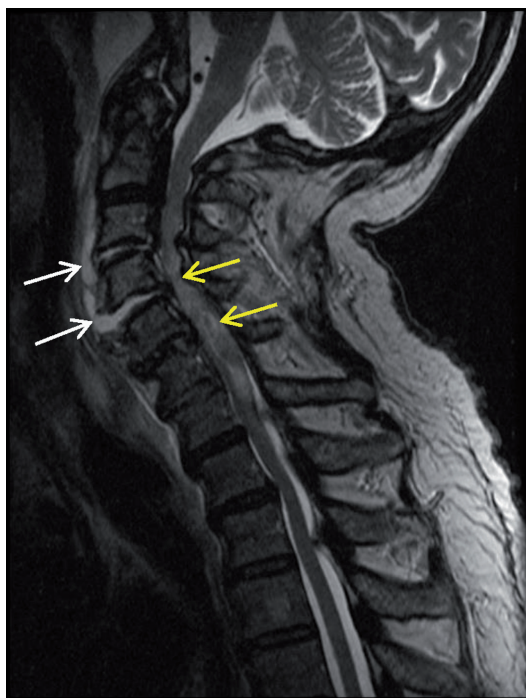


Figure 2. Sagittal T2-weighted magnetic resonance image of the cervical spine completed 6 days after the radiographs in Figure 1 revealing levels of severe cervical central canal stenosis with cord oedema from C3 to C7 (yellow arrows), abnormal signal in the disc spaces at C3–4 and C4–5, widening of the disc space at C4–5 and extensive perivertebral soft tissue oedema that was consistent with a retropharyngeal abscess (white arrows)



considered.¹ At the time of the patient's follow-up visit, several components of the patient's presentation were consistent with a serious condition that warranted immediate medical referral, including worsening severe neck pain despite a clear mechanism of injury and a recent onset

of fever and confusion. In this case, the patient was diagnosed with a retropharyngeal abscess, cervical cord compressive myelopathy and pneumonia. Furthermore, it is likely that several factors contributed to this patient's rapid decline, including advanced age, comorbid illnesses and declining health (eg methicillin-resistant *Staphylococcus aureus* stasis ulcers of bilateral lower extremities, three bouts of bronchitis/pneumonia in the last 18 months, congestive heart failure and cardiovascular disease), and progressive cervical cord compressive myelopathy resulting in quadriplegia below the C4 myotomal level.^{2,3}

At his follow-up visit 4 days after his initial physical therapy visit, the patient's son reported that his father had a recent onset of fever and mild confusion; this warranted immediate medical evaluation and subsequent hospitalisation. In the elderly, infections commonly present with cognitive impairment or a change in mental status; frank delirium occurs in 50 per cent of older adults with infections.⁴ Furthermore, anorexia, functional decline, a history of falls, weight loss or a slight increase in respiratory rate may be the only signs indicating infection in older individuals; more typical signs and symptoms that may be seen in younger individuals, such as fever and leukocytosis, are frequently absent.³ Assessment of these signs and symptoms may help the clinician assess the severity of illness and determine the need for further medical evaluation and possible hospitalisation.

Clinicians should understand the clinical findings associated with serious medical disease causing neck pain, as these findings provide guidance for medical referral. More specifically, in patients with progressive spinal pain or neurological compromise, cervical cord compressive myelopathy infection and should be considered in the differential diagnosis (Table 1).^{2,3} While several components of this patient's history and physical examination were consistent with a mechanical musculoskeletal dysfunction at the time of initial evaluation, there were signs and symptoms present that may have been suggestive of more serious underlying disease, including the patient's neck pain being worst at the end of day and into the night, difficulty sleeping due to the pain, the recent

need for a front-wheeled walker for ambulation, difficulty swallowing and a 4.5-kg weight loss in the last 2 months. The dysphagia and weight loss were attributed to a recent case of bronchitis. Nonetheless, given these red-flag findings and the patient's history of cancer and infections (Table 2), advanced diagnostic imaging of the patient's cervical spine should have been completed at the time of initial evaluation, as there is therapeutic value in prompt diagnosis, because specific treatment can be initiated.

A retropharyngeal abscess is a rare clinical condition that carries serious sequelae that can occur as a result of an associated disease, such as a recent bacterial infection of the upper respiratory tract or local trauma or instrumental procedures (eg laryngoscopy, endotracheal intubation, feeding tube placement).⁵ Prompt diagnosis and early management (eg appropriate antibiotics and surgical drainage) are key to achieving the best results. Signs and symptoms of a retropharyngeal abscess include dysphagia, a fever, and neck pain/stiffness. However, the early signs of a retropharyngeal abscess may be subtle and non-specific, which may lead to misdiagnosis and a delay in appropriate management.⁵ A complete assessment is essential to identify older adults at higher risk for a retropharyngeal abscess or other infections of the cervical spine.

Conclusion

Neck pain is a common condition for which patients routinely seek medical intervention. Although a specific pathoanatomical source cannot be routinely identified in most patients with mechanical neck pain, a low number of patients may have a serious underlying medical condition that may be causing their neck pain, which would warrant specialist referral and advanced diagnostic imaging. More specifically, in patients with progressive spinal pain or neurological compromise, more sinister specific pathologies such as cervical cord compressive myelopathy or infection should be considered in the differential diagnosis and advanced diagnostic imaging is indicated. Failure to accurately identify patients with cervical cord compressive myelopathy or infection in a timely manner can result in progressive symptoms that

may not be effectively treated with conservative or surgical interventions.

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COMPETING INTERESTS

None

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