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# Cervical spondylosis mimicking cardiac angina

Mila Nu Nu Htay, Han Ni, Soe Moe

## ABSTRACT

**Introduction: Cervical angina is caused by the disorder of intervertebral disc between the cervical vertebrae. The patients may present with symptoms of chest pain, radiating to ipsilateral upper limb. Since the clinical presentations are similar with the other pathological conditions, cervical angina is often overlooked in the clinical setting. Case Report: A 53-year-old lady, a non-smoker, presented to the hospital with chest pain for 11 weeks. The pain was intermittent, constricting in nature and lasted for two to three hours associated with left upper limb tingling sensation. Apart from herpes infection over her left chest 20 years ago, she has no previous history of hypertension, diabetes mellitus or dyslipidemia. Initially, she was treated with pain killers, antibiotics and antiviral drugs at different clinics, however, her chest and back pain were not relieved. Her ECG, echocardiogram and lipid profile were normal. Magnetic resonance imaging (MRI) revealed degenerative changes of cervical spine with moderate to severe left neural foramen stenosis compressing left C6 and C7 nerve roots. She was treated with acupuncture and medications which relieved the pain. Conclusion: Cervical angina accounts for approximately about 50% of the patients presenting with angina like chest pain and a strong sense of suspicion is essential in patients with inadequately explained chest pain.**

**Keywords: Acupuncture, Cervical angina, Cervical spondylosis, Disc protrusion, Radiculopathy**

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## INTRODUCTION

Chest pain is a common symptom presented at the emergency department with a wide range of differential diagnoses [1] and approximately 50% is due to non-cardiac pathology [2]. Disorder of cervical spine is a potential cause of non-cardiac chest pain which is under-recognized in clinical practice [3].

The intervertebral discs (IVD) serve as a cushion between the vertebral bodies from cervical spine to sacrum to absorb the stress and to allow the movement of the spine. The structural component of IVD can be divided into two parts, the central nucleus pulposus and the outer annulus fibrosis [4]. Displacement of nucleus pulposus in between the cervical vertebra can lead to the disc herniation and compression of spinal cord and nerve roots [5]. Majority of cervical disc herniation (90%) occurs at C5-6 and C6-7 [4] and mainly occurs in the middle and elderly age groups [6]. The patients may present with the chest pain or subscapular pain which is usually known as cervical angina [5]. Since the clinical presentations are

similar with the other pathological conditions, cervical angina is often missed in the clinical setting.

We reported a case of 53-year-old lady with no known cardiac risk factors who presented with left sided chest pain and subscapular pain, where cervical spondylosis was overlooked at initial stages of assessment.

## CASE REPORT

A 53-year-old lady presented with left-sided chest pain and back pain between the spine and left scapula on and off for 11 weeks. The pain was intermittent, constricting in nature and each episode lasted for two to three hours. Pain was accompanied with left upper limb tingling sensation, however, it was not associated with palpitation, orthopnea or other autonomic symptoms such as nausea and vomiting. She denied fever, cough, wheezing, heartburn or regurgitation. 20 years ago, she had herpes infection over her left chest. She had undergone appendectomy, however, no known history of hypertension, diabetes mellitus, hyperlipidemia or ischemic heart disease and the family history was also unremarkable.

Initially, she was treated as costochondritis with diclofenac injection at a clinic which only offered a temporary pain relief and pain recurred after 2 hours. Upon further consultation with a respiratory physician, she was treated as pleuritis with analgesics and antibiotics. However, pain recurred after a few hours and not relieved with medications, thus she was admitted to a local private hospital for further evaluation. Upon admission, her general condition was fair and her vitals were normal (blood pressure: 110/60 mmHg, pulse rate: 68 per minute, temperature: 37°C and SpO2: 100% on air. On cardiovascular examination, first and second heart sounds were normal with no additional sounds. The other systemic examinations were also normal.

ECG showed normal sinus rhythm with no acute ST deviation or T wave inversions (Figure 1). Cardiac enzymes were within normal limit. In chest X-ray (PA), the heart was normal in size and shape, with no active lung lesions. Stress ECG, ECHO and angiography were not done. Other blood tests including lipid profile, blood glucose, urinalysis, ultrasound abdomen and pelvis were normal (Table 1). She was treated with aspirin, carvedilol, pantoprazole, alprazolam, pregabalin, sertraline together with vitamins B1, B6 and mecobalamin. Pain was relieved and she was discharged after 2 days.

Three weeks later, the pain reappeared at the same area with burning sensation. This time, she was diagnosed as post herpetic neuritis and prescribed acyclovir for 7 days. However, the pain persisted, and therefore she came to the hospital in Thailand for further investigations and management.

The magnetic resonance imaging (MRI) examination of cervical spine was performed which revealed cervical spondylosis at the levels of C2-3 to C6-7, predominantly

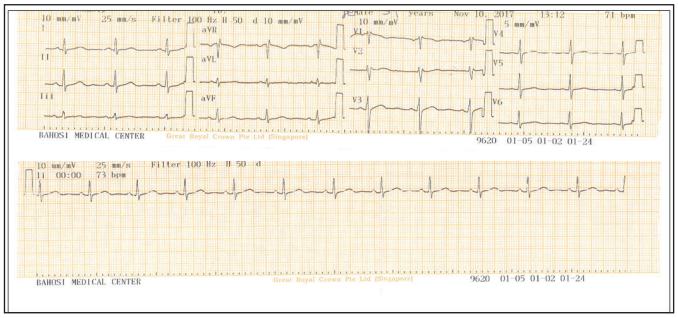

Figure 1: Normal ECG finding of the 53-year old lady, presented with left-sided chest pain and back pain between the spine and left scapula.

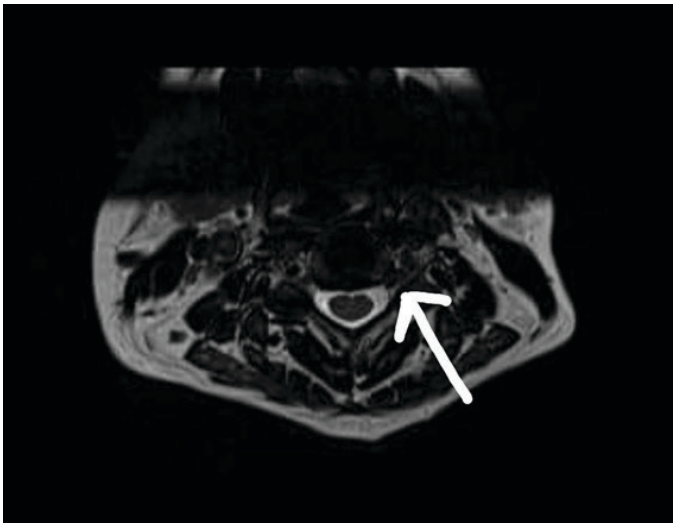

Figure 2: Single T2W axial MRI image of cervical spine showing left paracentral disc herniation with narrowing of exit foramen.

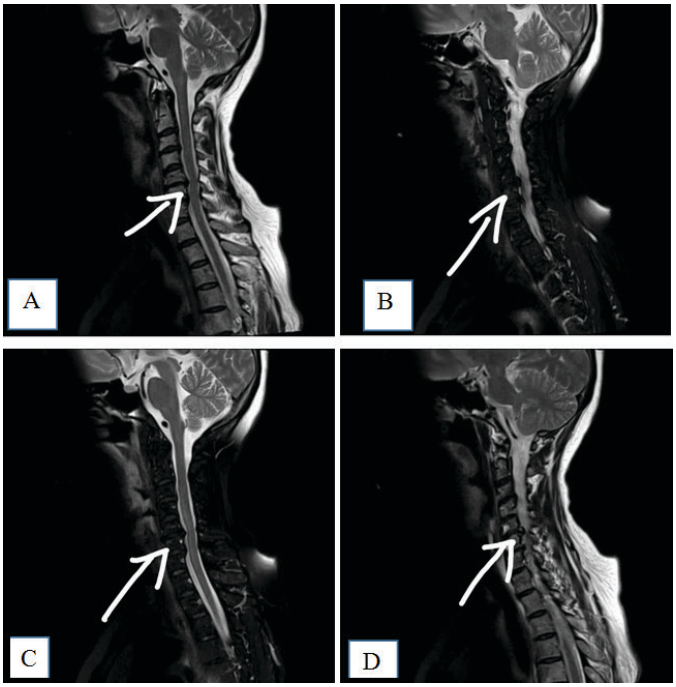


Figure 3: Sagittal T2W MRI images of cervical spine showing disc space narrowing and herniation of C5-6, C6-7 with resultant central canal narrowing which is more obvious on left side with no cord signal changes.

Table 1: Laboratory investigation results

| Investigations | Result | Reference |
|---|---|---|
| **Full blood count** | | |
| RBC | 4.37[$10^6$/ul] | (93.80–5.80) |
| WBC | 6.96 [$10^3$/ul] | (4.00–11.00) |
| PLT | 289[$10^3$/ul] | (150–400) |
| HCT | 39.4 [%] | (40.0–45.0) |
| MCV | 90.2 [fl] | (76.0–96.0) |
| MCH | 30.0 [pg] | (27.0–33.0) |
| MCHC | 33.2 [g/dL] | (32.0–36.0) |
| **Renal function test** | | |
| Urea | 3.2 mmol/l | (3.3–7.0) |
| Sodium | 141 mmol/l | (136–148) |
| Potassium | 4.3 mmol/l | (3.5–5.1) |
| Chloride | 105 mmol/l | (98–107) |
| Bicarbonate | 24 mmol/l | (22–29) |
| Creatinine | 52 umol/l | (45–84) |
| **Lipid profile** | | |
| Cholesterol | 161mg/dl | (0–200) |
| Triglycerides | 66 mg/dl | (40–150) |
| HDL | 74 mg/dl | (35–65) |
| LDL | 76 mg/dl | (0–130) |
| VLDL | 13mg/dl | |
| C/H Ratio | 2.18 | |
| **Infection screening** | | |
| HBs Antigen | Negative | |
| HCV Antibody | Negative | |
| HIV ½ Antibody | Negative | |
| **Urinalysis** | | |
| Epithelial cells | 0–1 /hpf | |
| Pus cells | 1–3 /hpf | |
| Red blood cells | Nil | |
| Casts | Nil | |
| Cardiac enzymes | | |
| CK-MB | 13.00 U/l | (1.00–25.00) |
| Troponin I | Negative | |

*Abbreviations:* RBC, WBC, PLT, HCT, MCV, MCH, MCHC, HDL, LDL, VLDL, C/H Ratio, HBs, HCV, HIV, CK-MB.

at C 5-6 and C 6-7. The central and left subarticular or foraminal disc protrusion was detected, causing mild spinal stenosis and moderate to severe left neural foramen stenosis, compromising left C6 and C7 nerve roots (Figures 2, 3). She was referred for acupuncture together with muscle relaxant (tolperisone), selective COX-2 inhibitor (Etoricoxib) and proton-pump inhibitor (Esomeprazole). Pain was relieved within an hour of acupuncture and currently she is pain free for two months.

## DISCUSSION

Cervical spondylosis is a progressive disorder due to degeneration of intervertebral discs and cervical spine as an aging process [7]. The degeneration and displacement of the central nucleus pulposus of intervertebral disc can be classified into disc bulge, protrusion, extrusion and sequestration [8]. When the intervertebral disc herniates at the cervical region, it may compress to the spinal cord and cervical nerve root leading to the ipsilateral pain of neck, chest and subscapular region which may radiate to the upper limb [8].

As the nature of the pain is similar with angina pectoris, it is known as cervical angina or pseudo angina [9]. In our case, the patient had pain over left chest and interscapular region. However, the initial diagnoses were costochondritis, pleuritis, post-herpetic neuralgia and was overlooked for cervical angina. Because of the recurrent pain during the course of this illness, the patient undergone a series of investigations with a delay in diagnosis. Similar situations had been faced by patients with cervical angina, they undertook extensive cardiac investigations and hindered to have the precise diagnosis [10]. Therefore, awareness of the clinicians is crucial for early diagnosis and appropriate management.

Approximately 70% of cervical angina has the underlying cervical nerve root compression. The cervical spine C5-C6 and C6-C7 levels are most commonly affected and attributed for 67% of patients with radicular pain [5]. Discography is the functional test and gold standard to identify the source of pain [5]. However, discography is reserved for patients who have significant pain and plan to undergo surgery [5]. MRI can demonstrate degenerative changes in the spine and provide an anatomical diagnosis of cervical spondylosis [5]. In our patient, the MRI finding revealed changes of cervical spondylosis predominantly at C 5-6 and C 6-7, which is the commonest site of degeneration. The central and left subarticular disc protrusion was detected, causing spinal stenosis, left neural foramen stenosis with compression of left C6 and C7 nerve roots.

The management options of cervical spondylosis include neck immobilisation, pharmacological treatments (NSAIDs, muscle relaxants), physical modalities, lifestyle modification and surgical management (cervical discectomy) [6]. Most cases of cervical angina responded satisfactorily to the standard nonsurgical regimen, employed for at least three months, such as the use of hard collar, intermittent traction, isometric exercise, and a combination of anti-inflammatory and muscle relaxant medications [9]. Additionally, acupuncture treatment alleviates the symptoms and is shown to have positive outcomes in cervical spondylosis [11]. A meta-analysis of 27 studies reported that acupuncture combined with additional therapies had a cure rate of 53% and effectiveness rate of 94% in the cervical spondylosis patients [11]. In our patient, symptoms were alleviated by muscle relaxants, NSIADs and acupuncture.

Since the probable first report of non-cardiac chest pain due to spondylitis in 1937 [12], it is not unusual to encounter patients with chest pain of cervical nerve root origin, however, it remains under recognized and usually overlooked. The duration of symptoms prior to definitive diagnosis ranged from 10 to 18 months, and majority had

prior consultation with cardiologists. Thus, high index of suspicion and awareness of cervical angina is of utmost importance for early diagnosis to prevent unnecessary delays in treatment.

## CONCLUSION

Approximately half of the patients presented with angina like chest pain are due to cervical angina. Therefore, recognition of cervical angina by the clinician is crucial to arrive the precise diagnosis and appropriate management.

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### Author Contributions

Mila Nu Nu Htay – Conception of the work, Design of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Han Ni – Conception of the work, Design of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Soe Moe – Acquisition of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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The corresponding author is the guarantor of submission.

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### Consent Statement

Written informed consent was obtained from the patient for publication of this article.

### Conflict of Interest

Authors declare no conflict of interest.

### Data Availability

All relevant data are within the paper and its Supporting Information files.

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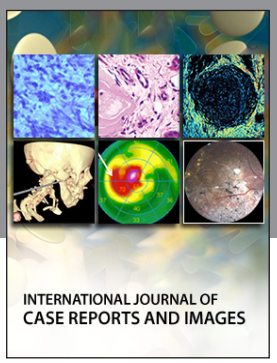




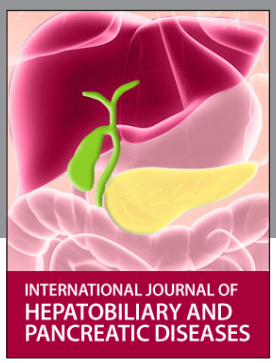




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