



FLUOROSIS SPINE WITH CERVICAL MYELORADICULOPATHY AND OPLL – CASE REPORT

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ABSTRACT To report case presentations of cervical myelopathy with ossification of the posterior longitudinal ligament (OPLL) due to fluorosis. Fluorosis is regularly found in a particular place or among a particular group of people which always goes unnoticed unless otherwise, complication develops. It may be prevented easily if you identify and treat it promptly. The skeletal system is one of the supporting systems of our body that gets affected by fluorosis and leads to catastrophic changes. So, it is always necessary to monitor the people living in an endemic area and also people presenting outpatient departments with spine problems.

KEYWORDS :

INTRODUCTION

Skeletal fluorosis is an endemic disease that occurs due to chronic ingestion of a large amount of fluoride. It will incorporate into the bony hydroxyapatite by altering its mechanical properties. The fluorapatite leads to an abnormal and poor quality of bone that is prone to fractures.¹ The most evident changes are noted in the spine, wherein calcification of neural arch, osteophytes, and ossification of ligamentum flavum (OLF) and posterior longitudinal ligament (OPLL) ends in canal stenosis and eventually a poker spine.^{2,3} The cervical cord is affected before the dorsal cord,⁴ and sometimes the patient may present late with a picture of multiple-level cord involvement. Collectively, all these factors increase the incidence of myelopathy and spinal fractures. Computed tomography (CT) and resonance imaging (MRI) should be performed to spot the stenosis and rule out fractures of the spine which will not be evident on standard radiographs.

The objective is to report the case presentations of cervical myeloradiculopathy with cervical stenosis due to fluorosis.

Case details

A 67-year-old male from Pondicherry, India, presented with numbness with paraesthesia in both the upper limb but more on the left forearm in the medial aspect and fingertips that were insidious in onset, associated with cervical and low back pain for more than a year. He also had a history of urinary urgency for 6 months. Symptoms became worsened and were not relieved with analgesics and nerve supplements. On examination he was having slightly increased muscle tone bilaterally, motor examination normal, deep tendon reflex brisk in both upper limbs and exaggerated in lower limbs with ill sustained clonus. Findings are outlined in Table 1. After informed consent and under ETGA, patient in a supine position, baseline SSEP, and MEP checked, turned prone, head in 3 pin Mayfield clamp, neck neutral, parts prepared and draped. Skin incision frominion to C7 spine process. incision deepened in layers to reach the spine process. C2-C4 process exposed. Subperiosteal dissection of muscles/ligaments. Lamina and lateral processes of C2-C4 exposed. Pilot holes made over lateral masses of C2-C4. C2, C3, C4 lamina drilled off and cord decompressed. Compression was noted at these levels, decompressed, and cord seen free at end of the procedure.

C2 - 16 mm lateral mass screws: C3, C4- 14 mm bilateral mass screws fixed, 2 rods placed and fixed (Globus). Construct under II looked satisfactory. Wound closed in layers with the drain in situ. The postoperative period was uneventful.

Table 1

Case presentation
Age: 67
Sex: male

Symptoms:

numbness with paraesthesia in both the upper limbs, urinary urgency, and cervical pain for more than 6 months

Signs:

GE- moderately built, ambulant, and vitals stable.

Tone:

Upper limb – slightly increased
Lower limb – increased

Sensory:

Motor: Power

Upper limb – 5/5
Lower limb – 5/5

Reflex:

Upper limb – brisk
Lower limb – exaggerated, ill sustained clonus present

X-ray: cervical spondylosis with degenerative changes.

MRI Spine: C2-C4 cord compression with cord changes with OPLL at the same level.

Treatment: posterior C2-C4 laminectomy with decompression and stabilization with lateral mass screws

Postoperative: uneventful

Follow Up: 3 months and 1 year



Fig: 1 – MRI showing compression between C2 – C3 spine level



Fig:2 – post-operative MRI showing decompression bet C2- C4 spine level.

DISCUSSION

The increased level of fluoride not only affects dental and bone tissues, but also affects the cardiovascular, nervous, gastrointestinal, endocrine, and reproductive systems⁵ which is often overlooked by physicians. Even though it is a trace element, those people who live in the endemic area should be screened for high fluoride content in their bodies. Normal fluoride level is 0.5 to 0.8 in drinking water, 0.1 to 2 ppm in the urine, and 500 to 1000 ppm in bone. The safe level is <6mg/day⁶. Chronic fluoride ingestion leads to skeletal fluorosis, resulting in osteosclerosis, degenerative joint changes, and ligament calcification^{7,8,9}. Initially, it may be asymptomatic but later it may lead to deadly complications.

It causes a substitution of the hydroxyl group in hydroxyapatite and leads to fluorapatite formation.¹⁰ This alteration leads to changes in the crystallinity of bone, in turn resulting in a reduction in the mechanical strength of the bone. Fluorosis leads to calcification of posterior spinal ligaments. Although rare, calcification of posterior longitudinal ligament secondary to fluorosis has been documented previously and noted in this case. So, fluorosis should be considered as a differential diagnosis for OPLL. Fluorosis will cause compression at a different level and sometimes multilevel decompression is also needed to obtain a functional spine.¹¹ Even in this case also cord compression is noted at multiple levels but more on the C2-C4 level and if not treated it may lead to motor impairment like paralysis and loss of bladder and bowel control. It was identified and treated surgically to prevent complications. But the follow-up is needed to review for any neurological findings.

CONCLUSION.

Presentation of cervical myeloradiculopathy in fluorosis is identified and treated. So, it is always recommended to do physical examination and MRI annually in case fluorosis patient to prevent complications. Spinal cord compression is associated with surgical emergencies and wishes to be treated quickly.

ETGA - endotracheal tube intubation general anesthesia

SSEP - somatosensory evoked potential

MEP - motor evoked potential

OPLL - ossified posterior longitudinal ligament

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