

# Huff Huff and Away: Skeletal Fluorosis Masquerading as Ankylosing Spondylitis

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## Background

- Skeletal fluorosis is characterized by excessive intake of fluoride and subsequent accumulation in bone leading to alteration of bone composition, increased density, and weakened structure [2]. The infrequency with which it is encountered makes skeletal fluorosis a difficult diagnostic challenge.

## Patient Presentation

- A 37-year-old male with no known past medical history presented with complaints of cervicothoracic pain and stiffness. He described onset approximately one-year prior without antecedent fall or trauma.
- Symptoms started in the cervical spine, and then gradually progressed into thoracic and lumbar spine.
- On physical exam, he remained fixed in forward flexed posture with inability to engage in cervical extension. He also grossly lacked thoracolumbar mobility, but otherwise neurovascular exam was normal.

## Clinical Case

- A skeletal survey revealed diffuse sclerotic changes throughout the axial and appendicular skeleton (see right).
- MRI cervical spine demonstrated abnormal marrow involving all osseous elements prompting endocrine and rheumatology consultation.
- Further questioning revealed that prior to symptom onset, he began regularly “huffing,” a practice characterized by inhaling aerosol propellants.
- Plasma and urine fluoride were elevated to 38.1 mcmol/L (normal 0-4mcmol/L) and 48.8 mg/L (Normal 0.2-3.2mg/L) respectively confirming the diagnosis.

## Discussion

- This case illustrates the value of a complete and thorough history to differentiate skeletal fluorosis from potential mimicking conditions such as ankylosing spondylitis, diffuse idiopathic skeletal hyperostosis, or familial osteopetrosis. In this instance, all were considered differential diagnoses until drug use history was accurately obtained.
- Only few cases in literature are reported secondary to aerosol propellant inhalation [1,3], as the more common etiology is chronic ingestion of contaminated groundwater [2,4].
- Although this complication is a documented manifestation of fluorosis, it has less commonly been attributed to aerosol propellant inhalation. Given its similarities to other musculoskeletal conditions, early recognition of this syndrome and cessation of excess fluoride intake is critical to prevent further disease progression.

## Skeletal Survey



- Osteosclerosis is an abnormal increase in bone density observed radiographically by a homogenous appearance and increased “whiteness” of the bone.

## References

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