A Case of Slowly Enlarging Nodules

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Clinical Image Description:

Pictured here are subcutaneous nodules of the right lower extremity of a 74-year-old male patient with a past medical history of prostate cancer and Freon inhalation since his mid-30’s. These nodules have been sporadically and progressively enlarging since the patient first noticed them in 2010. They are non-tender and have no associated overlying skin changes aside from dry skin and resulting pruritus. X-Ray imaging identifies these subcutaneous nodules as osseous in nature. The ossification is non-continuous with the medullary cavity and there is associated diffusely increased bone density.

In 2014 the patient sought medical counsel and was worked up for differential diagnoses including heterotopic ossification, fibrous dysplasia, fluoride toxicity, sarcoidosis, calciphylaxis, Ehlers Danlos Syndrome, tertiary syphilis, melorheostosis, and osteochondromas. Findings were most consistent with skeletal fluorosis secondary to a history of Freon inhalation, and the patient subsequently discontinued Freon use.

The patient presents today (July 2020) with pathologic fractures of his left clavicle and right iliac bone, with a history of bilateral rib fractures seen on imaging in 2018. These pathologic fractures are likely secondary to the diffuse increase in bone density secondary to skeletal fluorosis, or possibly secondary to bony metastases from prostate cancer - the changes on imaging secondary to his skeletal fluorosis lessens the ability to identify new metastases.

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Pictured here is a whole-body nuclear medicine bone scan taken of the patient two years prior that shows multiple exophytic foci of increased uptake in the bilateral forearms, lower legs, bilateral ribs and right L4 vertebral body. From this imaging alone, it is unclear whether the foci are extending from bone or isolated to soft tissues. A biopsy was subsequently taken of one of the nodules on the right tibia which revealed a benign bony overgrowth with excess fluoride, likely representive of all the nodules. Subsequent serum Fluoride level resulted at 5.2 mg/L (reference interval < 0.2 mg/L). The patient endorsed habitual use of inhaled Freon, a hydrofluorocarbon used in air conditioning and refrigeration in which inhalation leads to short-lived intoxication similar to that of alcohol. A diagnosis of Skeletal Fluorosis from inhaled Freon is made. This diagnosis, more commonly seen in industrial workers with accidental exposure or in consumption of fluoride from drinking water, has manifestations mainly seen in the bone structure. Deposition of fluoride leads bones to become hardened, less elastic and more prone to fracture and nodule formation. The patient ceased using Freon following his diagnosis, but his lesions remained.