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Back pain in chronic renal failure

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Back pain in chronic renal failure

Patient SK, a 40-yr-old female, resident of Bhagalpur village in Bihar, India, was operated for gallstones 3 years previously. On pre-operative checkup, mild renal dysfunction was detected. She was asymptomatic for renal disease with serum creatinine of 159 μmol/l (1.8 mg/dl), bland urinary sediment and small echogenic kidneys on ultrasound. She was put on conservative management for chronic renal failure (CRF) and was doing well till 1 year ago. Since then she developed back pain, which increased on walking. Pain was dull in character without any radiation. There were no systemic complaints. In the past month when her pain increased substantially, causing discomfort in day-to-day activities. On investigation she was found to have moderate renal failure with blood urea nitrogen (BUN) of 11.8 mmol/l and serum creatinine of 309 μmol/l (3.5 mg/dl). Other labs showed serum calcium of 2.4 mmol/l, phosphorus 1.1 mmol/l, alkaline phosphatase 243 U/l, uric acid 381 μmol/l and intact parathyroid hormone (iPTH) of 182.0 pg/ml. X-rays of bilateral forearms, pelvis and spine were taken (Figures 1–3, respectively), which revealed generalized increase in bone density, degenerative changes with osteophytes in lumber vertebra, calcification of bilateral iliolumbar and sacrospinous ligaments and interosseous membrane calcification in forearms. Definitive diagnosis was reached with estimation of fluoride levels in blood and urine, which were 0.291 mg/l and 0.962 mg/l (15.3 and 50.6 μmol/l), respectively. Her drinking water source, ground water from a tubewell, was found to contain 3.910 mg/l (205.9 μmol/l) of fluoride. She was diagnosed to have fluorosis with moderate CRF and was advised to use domestic reverse-osmosis-treated water for cooking and drinking.

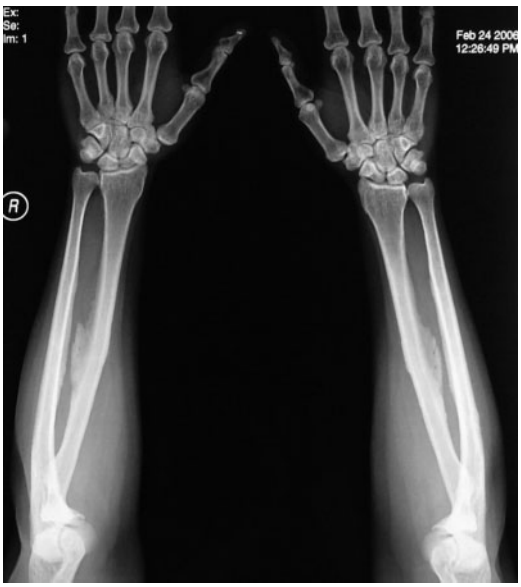

Fig. 1. Plain film of both forearms showing interosseous membrane calcification.

Main sources of fluoride include food and water. About 50–70% of fluoride is excreted by the kidneys [1]. Individuals with kidney disease have decreased ability to excrete fluoride in urine and are at risk of developing fluorosis even at normal recommended limit of 0.7 to 1.2 mg/l (37–63 μmol/l) of fluoride in drinking water [2]. In fluorosis with normal renal function, urine fluoride rises above 0.5–4.48 mg/l (26–236 μmol/l) and may reach 1.5–13.0 mg/l (79–685 μmol/l) [3]. Serum fluoride rises to 0.04–0.28 mg/l (2.1–14.7 μmol/l) in such patients [1]. Fluoride is bone-seeking due to its high affinity for calcium phosphate and therefore accumulates in bone. Radiological changes can be quite similar to changes of renal osteodystrophy, and therefore the diagnosis may be missed unless specifically investigated.

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Conflict of interest statement. None declared.

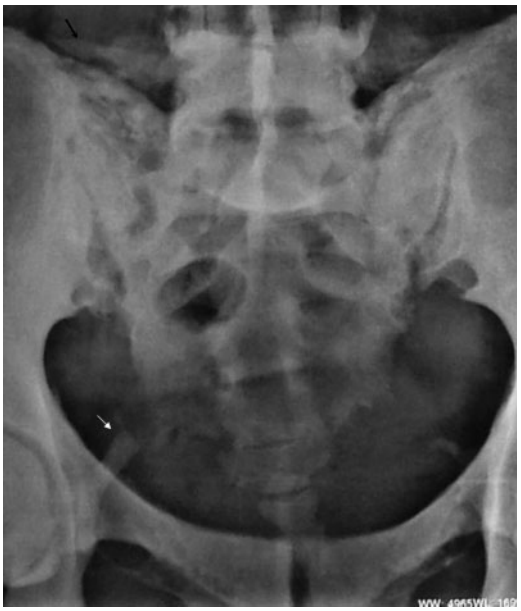

Fig. 2. Plain film of pelvis showing calcification of bilateral iliolumbar (black arrow) and sacrospinous ligaments (white arrow).

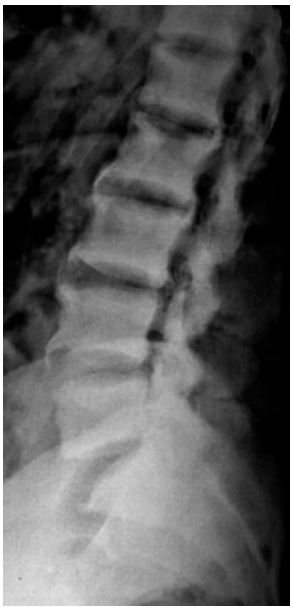

Fig. 3. Plain film lateral view of lumbar spine showing increase in bone density with osteophytes.

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