

Assessment of Biochemical, Orthopedic and Neurological Complications during the Management of Skeletal Fluorosis

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Abstract: ***Aim:** This study was undertaken to formulate prescription and treatment guidelines both operative and non-operative for the flourosis affected individuals. A note on the surgical management and its complications were reviewed. **Background:** flourosis is still a common problem encountered in several villages in our district and taluk. Treating them poses a challenge in view of altered biochemical and metabolic parameters. My study aims at highlighting the possible biochemical anomalies to be kept in mind before treating them. **Materials and methods:** We followed a group of 22 patients who presented to us in our OPD and emergency departments of our hospital. 8 of them came for trauma and the rest with musculoskeletal and neurological complaints. Informed and written consent was taken before recording the data. Other causes of sclerosis like pagets and secondaries were excluded from the study. Clinical and radiological and biochemical analysis were performed. Patients with diabetes mellitus and uncontrolled hypertension were excluded from the study. **Results:** Anaemia leucopenia renal insufficiencies were encountered in patients. Pathological fractures bowing of long bones were seen. Cervical and lumbar spinal canal stenosis was encountered with neurogenic claudication. **Conclusion:** Careful prescription of analgesics avoiding nephrotoxic medication is the key in the management. Early diagnosis by BMD X ray and biochemical parameters helps to avoid locomotor disabilities.*

Keywords: flourosis, skeleton, biochemical, radiological, neurological, complications, prevention of complications

1. Introduction

Flourosis continues to affect a large section of population in rural areas. If left undiagnosed leads to locomotor disabilities which inturn has a socioeconomic impact in our predominantly agricultural based economies. In addition it leads to deformities in the long bones and due to its prediliction for axial skeleton leads to stiffness and neurogenic symptoms warranting surgical procedures.

2. Materials and Methods

Our study included 22 patients out of which 8 presented with fractures due to preexisting deformities. The remaining presented with symptoms of axial skeleton stiffness and symptoms of compressive myelopathy and radiculopathy 5 of whom needed surgical decompression of spine.

The 13 patients who needed surgery were evaluated by surgical profiling along with X ray and haematological parameter assessment specific to the disease.

Careful neurological assessment was carried out for the compressive myelopathy group. Out of 14 patients 9 were treated by medical management and 5 underwent decompression of lumbar and dorsal spine by neurosurgeon. 4 patients underwent nailing of the femur and 4 underwent tibial intramedullary nailing.

3. Results

The surgical group 8 were male and 5 were female. 11 were in 50-60 year age group and the other 2 65 and 68 years respectively. In the non operative group 6 were male and three female. Majority 7 were in the 35-45 year age group the other 2 were 59 and 65 years respectively.

In the surgical group hemoglobin was below 9 gms percent in 6 of them requiring transfusion before surgery. In the non operative group on average hemoglobin was around 10gms percent.

Due to history of prolonged analgesic and steroids combined with excessive flouride ingestion renal insufficiency was documented in 8 patients of the operative group and in 5 patients of the nonoperative group.

The creatinine levels were around 1.9 on an average in the 8 patients of the operative group and 2.4 in the nonoperative group. EGFR revealed 40ml/min/1.73m that is moderate to severe loss of kidney function in the operative group and 31ml/min/1.73m indicating moderate to severe kidney disease (stage-3).

In the operative group the bones were sclerotic and intraoperative difficulties noted during reaming and drilling. The healing time on an average was 6 months 2 of them needed bone grafting and 1 of them had implant failure which necessitated revision. One got infected which settled down after implant removal once the fracture was united.

4. Discussion

In the operative group after clearance from physician patients underwent surgery. Due to the calcified spinous ligaments spinal anaesthesia was difficult and one patient needed general anaesthesia. Intraoperatively nephrotoxic medication was avoided and care was taken to avoid hypotension and further renal compromise. Post operatively NSAIDs were avoided tramadol and paracetamol were analgesics of choice. Aminoglycoside antibiotics were avoided with preference to fluoroquinolones. Mobilisation was carried out in a guarded manner and they were discharged on 12th postoperative day. They were followed up at 6 weeks and 3 months. Average time to healing was around 6 months and 2 necessitated bone grafting. 2 of them had implant failure which necessitated revision. Callus formation was inadequate and primary bone contact at the time of surgery was relied upon. After estimation of serum vitamin B12, vitamin D, and calcium and alkaline phosphatase these drugs were supplemented.

Compressive myelopathy was documented by MRI in 5 of them 4 at dorsolumbar and 1 at cervical level which necessitated decompression. After estimation of serum vitamin B12, Vitamin D, and calcium and alkaline phosphatase these drugs were supplemented. The rest of the patients with axial skeleton symptoms were treated with supportive bracing and serum vitamin B12, vitamin D, and calcium and iron supplements. Physiotherapy was advised accordingly.

5. Conclusion

Careful selection of analgesics and antibiotics is important to avoid anaemia and renal compromise in these patients with flourosis

Adequate supplementation of vitamin b12, vitamin D, and calcium and iron need to be done after their serum estimation to avoid hypervitaminosis and further renal and hepatic issues.

Intraoperatively anaesthesia and surgical problems have to be expected and planned accordingly so as to avoid prolonged anaesthesia and compromised result.