

Fluorosis (SEM II)

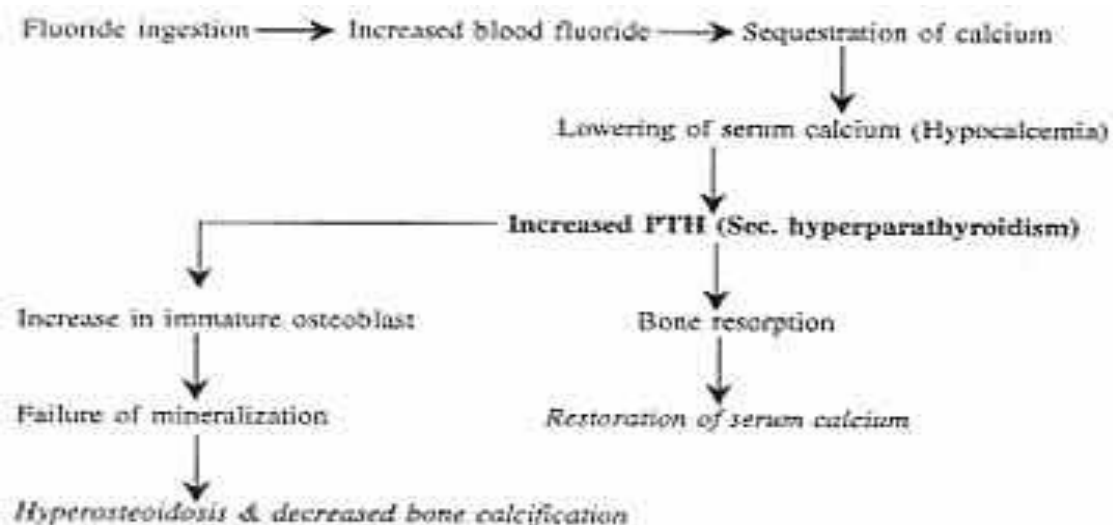
Fluorosis is a crippling disease resulted from deposition of fluorides in the hard and soft tissues of body. It is a public health problem caused by excess intake of fluoride through drinking water/food products/industrial pollutants over a long period. Ingestion of excess fluoride, most commonly in drinking-water affects the teeth and bones. High levels of Fluoride were reported in 230 districts of 20 States of India. Rajasthan, Gujarat and Andhra Pradesh are worst affected states. Punjab, Haryana, Madhya Pradesh and Maharashtra are moderately affected states while Tamil Nadu, West Bengal, Uttar Pradesh, Bihar and Assam are mildly affected states.

The desirable limit of fluoride as per Bureau of Indian Standards (BIS) is 1ppm (parts per million or 1 mg per litre).

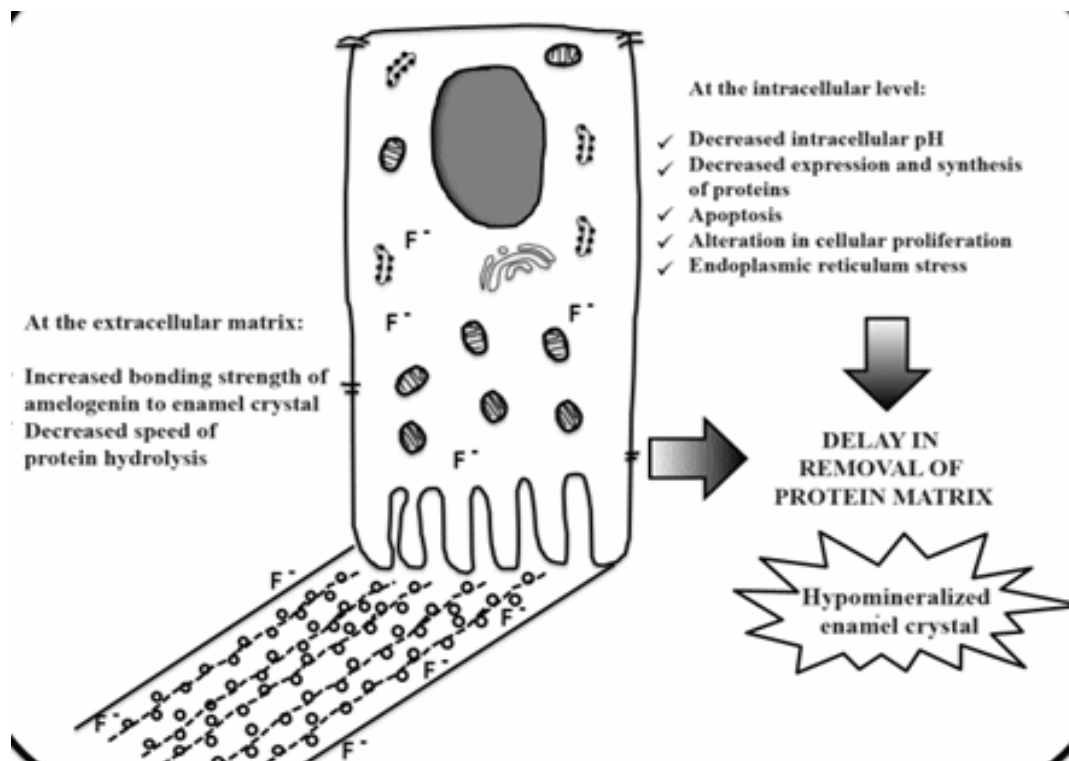
Atreyi Sarkar, SNGGDCG

Pathogenesis

Skeletal Fluorosis



Dental Fluorosis



Symptoms:

Dental Fluorosis

- Small opaque white areas covering teeth surface.
- The enamel of the teeth loses its lustre and becomes rough.
- Chalky white patches with a secondary infiltration of yellow/brown staining are found irregularly over the surface of teeth.
- In several cases there may be loss of enamel accompanied by “*pitting*” which gives the teeth surface a corroded appearance.

Skeletal Fluorosis

- Chronic Fluoride intoxication precipitates sclerosis and increased density of bones as well as hypercalcification on the bone matrix of spine, pelvis and limbs.
- Ligaments of the spine become calcified, producing a “poker back”.
- Collagen of the bones may also become calcified.
- Calcification of the skeletal muscle may also take place.
- Such persons are crippled and cannot perform simple daily tasks such as bending, squatting etc. as joints become stiff. Fingers become stiff due to the calcification of joints.

- “Rosery of spine” appears in radiography.
- Osteoporosis is a consequence of excess fluoride. The cumulative symptoms of skeletal fluorosis may be clinically manifested in “Genu valgum”, meaning knock knee. (A valgus deformity is a condition in which the bone segment distal to a joint is angled outward, that is, angled laterally away from the body's midline).

Prevention and treatment

- Restricting fluoride level of drinking water upto safe level.
- Food content of fluoride must be checked.
- High levels of Molybdenum and low levels of Copper contribute to the disease, hence these should be monitored.
- The Rajiv Gandhi National Drinking Water Mission started by Ministry of Rural Development worked for control of fluorosis through its awareness campaign from 1987- 1993, (coordinated by Fluorosis Control Cell at the All India Institute of Medical Sciences, Delhi) had a limited coverage.
- In 2008-09, Ministry of Health and Family Welfare, Government of India launched a National Programme for Prevention and Control of Fluorosis (NPPCF) with the aim for prevention, diagnosis and management of fluorosis in endemic areas.

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