PRESCRIBING INFORMATION

FLUOTIC®
(Sodium Fluoride Tablets 20 mg)

Medical Treatment of Otospongiosis

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(Sodium Fluoride)
20 mg Tablets

THERAPEUTIC CLASSIFICATION

Medical Treatment of Otospongiosis

ACTION

The action of FLUOTIC® (sodium fluoride) is partly by reducing bone resorption in the bone remodeling cycle and partly by increasing bone deposition.

In organ culture of specimens of otospongiotic bone removed at operation, sodium fluoride increases radioactive calcium uptake. Analysis of the fluoride content of otospongiotic bone shows a higher fluoride content in untreated patients than in the endochondral bone of the noninvolved stapes or the skeletal bone of the meatus. This is explained by the increased vascularity and bone remodeling activity with increased opportunity of trace amounts of fluoride normally present in food and water to contact the active focus. After moderate dosage sodium fluoride treatment for six (6) months, the fluoride content of meatal bone and stapedial crura is barely perceptibly increased, but that of otospongiotic bone is increased nearly threefold compared to untreated conditions. Thus, otospongiotic bone has an affinity for circulating fluoride.

The most convincing evidence of the effectiveness of sodium fluoride in reducing the activity of otospongiotic bone has been provided by enzymes studies in organ cultures of mature and immature specimens removed at surgery from treated and untreated patients. These investigations indicate a marked reduction in the enzyme activity of otospongiotic bone after treatment and during cultivation when fluoride is added to the culture medium.

Of great significance has been the finding that cytotoxic enzymes, found in the majority of patients undergoing stapedectomy who had shown progression in sensorineural loss before operation, were very rarely found in similar patients after sodium fluoride treatment for six months. The toxic enzymes liberated by the active focus appear to be the mechanism of the sensorineural deterioration. Sodium fluoride acts partly as an enzyme inhibitor and partly to decrease osteoclastic resorption and to increase calcification of the focus, thus arresting its activity.

CLINICAL EXPERIENCE

Over 9,000 cases of otospongiotic patients treated with sodium fluoride have been reported in the medical literature since 1964. In most cases, between 40 to 60 mg of sodium fluoride a day was administered. The duration of treatment in these studies varied between 6 months to more than 7 years in certain cases with no ill effects to the patients.

The drug was generally well tolerated, especially in patients who received concomitantly a supplement of calcium and of vitamin D. The side effects most frequently reported were gastro-intestinal complaints and musculoskeletal pain. There seems to be a relationship between therapeutic results and serum blood levels of fluoride and the optimum serum level appears to be from 8 to 12 μmol/L.

The overall clinical results indicate a stabilization of the sensorineural loss of hearing in 80% of cases. Other symptoms such as tinnitus, vertigo and postural imbalance associated with otospongiosis may be improved in 50 to 80% of cases depending on the symptoms involved and the severity of the condition.

INDICATIONS

Non-surgical cases
In patients with diagnosed neurosensorial hearing loss or tinnitus due to otospongiosis, especially if accompanied by a positive Schwartze sign indicating a vascular active focus.

In patients with postural imbalance and/or vertigo caused by a lesion of the posterior labyrinth consecutive to otospongiosis and in patients with radiologically demonstrated demineralization of the cochlear capsule.

Post-surgical cases
In patients where, following surgery, a soft vascular focus is encountered at the oval window or when the patients begins to experience progressive neurosensorial deterioration after successful stapedectomy.

CONTRAINDICATIONS

Since the safety of FLUOTIC® (sodium fluoride) has not been established in pregnant women, in children and adolescents up to 18 years old, FLUOTIC® should not be used in these patients.

FLUOTIC® is also contraindicated in severe renal insufficiency and in patients with an active peptic ulcer.

WARNINGS

FLUOTIC® (sodium fluoride) is not intended for dental use. FLUOTIC® should preferably be prescribed with a daily supplement of calcium and vitamin D.

Control of patients

It is important to make periodic examinations of patients as follows:

- Clinical examination of patients should be made every 6 to 12 months along with a renal function test and a serum fluoride determination;
- Radiological examination to exclude the possibility of fluorosis should be made every two years;
- Clinical experience has shown that the optimum sodium fluoride serum level should be between 8 to 12 μmol/L.

ADVERSE EFFECTS

FLUOTIC® (sodium fluoride), at the recommended dosage, is usually well tolerated. Mild reactions consisting of gastro-intestinal complaints, musculoskeletal pain and skin rash may occur.

OVERDOSE: SYMPTOMS & TREATMENT

Symptoms of acute fluoride poisoning are as follows: initial symptoms are secondary to the local action of fluoride on the mucosa of the gastro-intestinal tract. Salivation, nausea, abdominal pain, vomiting and diarrhea are frequent. Systemic symptoms are varied and severe. The patient shows signs of increasing irritability of the nervous system, including paresthesias, a positive Chvostek sign, hyperactive reflexes, and tonic and clonic convulsions.

These signs are related to the calcium-binding effect of fluoride. Hypocalcemia and hypoglycemia are frequent laboratory findings. The signs may be delayed for several hours. Pain in various muscle groups may occur. The blood pressure falls, presumably due to central vasomotor depression as well as a direct toxic action on cardiac muscle. The respiratory center is first stimulated and later depressed. Death usually results from either respiratory paralysis or cardiac failure. It is stated that the lethal dose of sodium fluoride for man is about 5 g; however, recovery has been reported in patients ingesting much larger doses, whereas a dose as low as 2 g has been fatal. In children, as little as 0.5 g of sodium fluoride may be fatal.

Treatment

The principles of the treatment of fluoride poisoning are as follows:

1. Act quickly.
2. Start intravenous therapy with glucose in isotonic saline solution to maintain blood sugar and to have a venous channel available for transfusion in the event of shock.
3. Wash the stomach with limewater (0.15% calcium hydroxide solution) and then give limewater at frequent intervals.
4. Have calcium gluconate available for intravenous administration and watch closely for signs of tetany.
5. Maintain high urine volumes with parenteral fluid.

DOSAGE AND ADMINISTRATION

The average dose of FLUOTIC® (sodium fluoride) is one tablet of 20 mg three times a day with meals.

Clinical experience with sodium fluoride in osteoporosis, multiple myeloma and ostopongiosis has shown that best results can be achieved by the addition of a calcium salt and of vitamin D.

The addition of calcium, preferably calcium carbonate, 2 to 3 grams a day, is of prime importance since the use of sodium fluoride alone has been associated with a fall of serum calcium and hyperparathyroidism. The net result is osteomalacia and increased bone resorption which may negate any beneficial effect that fluoride may have on bone formation. The effect of fluoride alone on bone is well known. Stimulation of osteoblastic bone formation occurs but in the absence of additional calcium, the bone is incompletely mineralized.

Recalcification of the focus is the indication to reduce the dosage to a maintenance level, while continued or increased activity as shown by polytomography, positive Schwartze sign and neurosensorial loss progression are the indications to continue treatment or to increase the dosage.

AVAILABILITY

Each red, enteric film-coated tablet, imprinted with the Nordic logo, contains 20 mg of sodium fluoride.

Non-medicinal ingredients: colloidal silicon dioxide, diethyl phthalate, lactose monohydrate, microcrystalline cellulose, Opadry orange YS-1-6215 and stearic acid. Gluten-free. Bottles of 100 tablets.

CHEMISTRY

Cubic or tetragonal crystals soluble in water and insoluble in alcohol.

PHARMACOLOGY

Sodium fluoride is rapidly and almost completely absorbed from the gastro-intestinal tract.

Certain cations such as calcium, magnesium, aluminium and iron retard the absorption of fluoride ion by forming low-solubility complexes in the gastro-intestinal tract.

Fluoride can be detected in all organs and tissues and especially in bones, thyroid, aorta and kidney. Fluoride is predominantly deposited in the skeleton and teeth and the degree of skeletal storage is related to age and intake. 50% of a given dose is excreted in the urine while the rest forms a chemical bond with bone.