Aluminum Hydroxide

Aluminum hydroxide is an antacid used for patients with pyrosis and other gastrointestinal distress. Side effects include constipation, hypophosphatemia, osteodystrophy, proximal muscle weakness, and seizures. Exercise caution when administering aluminum hydroxide with other drugs because it is a chelating agent.

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Clinical Use

Antacid
Ant-acid-bottle
Aluminum hydroxide is an antacid. It can reduce pepsin production, which is involved in HCl secretion and protects the stomach from alcohol and other irritants. In the stomach, aluminum hydroxide dissociates to Al³⁺ and OH-. The hydroxide group will bind free protons creating an insoluble salt (e.g., aluminum chloride) and water, increasing stomach pH.

Side Effects

Constipation
Corked Con-toilet
Aluminum hydroxide can relax gastrointestinal smooth muscles, resulting in constipation. The tendency to cause constipation makes most manufacturers combine it with magnesium hydroxide that has a laxative effect.

Hypophosphatemia
Hippo-phosphate-P
Aluminum hydroxide can bind phosphate in the gut lumen, resulting in aluminum phosphate formation, which is insoluble. This binding causes a reduction of phosphate in the blood, which leads to hypophosphatemia.

Osteodystrophy
Ostrich-disc-trophy
Aluminum is absorbed in the GIT and transported rapidly to bone. An extended period of aluminum exposure can deposit aluminum in the bone, cause an accumulative effect. It interrupts mineralization and bone cell growth activity. Aluminum overload can suppress the production of osteoblasts, resulting in low bone formation, causing osteodystrophy. This feature is also known as aluminum-related osteodystrophy.

Proximal Muscle Weakness
P-proximal Drooping Muscles
Aluminum hydroxide may cause symmetrical weakness of the proximal upper or lower extremities. Patients will have difficulties in combing, rising from a seat, climbing stairs, reaching high objects, and washing hair.

Seizures
Caesar
Another side effect is seizure. Aluminum can accumulate in gray matter, causing encephalopathy.

Considerations

Chelating Agent

Cleats-on Agent

Aluminum is a trivalent metal cation that can bind or chelate certain drugs, resulting in decreased absorption of other drugs. Consequences of this are reduced bioavailability of the other drugs.