

Causes of Tetany

1. **Hypocalcemia-** This condition refers to a below-normal level of calcium in plasma. Note- the normal concentration of calcium ions in a healthy adult is about 8-10.5 mg/dl in serum. Low free calcium levels in the plasma increase the depolarization of the neurons thereby **increasing neuronal excitability.**

Accidental damage to the parathyroid gland, autoimmune disorders, congenital defects can lead to decreased PTH secretion.

If the levels of calcium fall below normal, it increases the permeability of Na^+ ions causing recurring depolarization and contractions. This condition is called tetany. Low calcium levels may be caused due to low parathormone levels.

(b) Low vitamin D levels can also cause hypocalcemia as vitamin D helps in absorbing calcium. Low Vitamin D levels can be caused by lack of exposure to sunlight, malnutrition etc.

(c) Other factors include loss of calcium due to kidney and gastrointestinal diseases.

1. **Low levels of magnesium-** As magnesium is very vital to PTH synthesis.
2. **Alkalosis-** An increase in blood pH causes albumin, a blood protein, to bind with free calcium in the plasma. This causes decreased availability of free calcium ions. Severe alkalosis may lead to tetany. Alkalosis may be caused by continuous vomiting (loss of gastric acids), increased intake of alkaline foods etc.

3. **Clostridium tetany toxin**– An infection of clostridium tetany releases a neurotoxin which inhibits the release of neurotransmitters. This can lead to increased muscle tone and muscle spasm. The disease caused so is called tetanus (lockjaw disease)
4. **Hypokalemia**- This refers to decreased potassium (K^+) concentration in the blood. As we know, potassium is essential for repolarization of nerve cells, a decrease in potassium levels can lead to the various manifestation of tetany.

Treatment of Tetany

1. Intravenous or oral calcium supplemented with vitamin D
2. Magnesium administration to maintain optimum Mg^{2+} levels.
3. Administration of isotonic fluids, ammonium chloride in case of emergency (in case of alkalosis).
4. Antibiotics and antitoxin in case of C.infection. For the prevention of tetanus, DPT (Diphtheria, Pertussis, Tetanus) vaccination in childhood is advised.