



Osteomalacia

Overview

Osteomalacia refers to a marked softening of your bones, most often caused by severe vitamin D deficiency. The softened bones of children and young adults with osteomalacia can lead to bowing during growth, especially in weight-bearing bones of the legs. Osteomalacia in older adults can lead to fractures.

Osteomalacia differs from the more-common condition of having a low vitamin D level. Osteomalacia also differs from osteoporosis, which causes bone thinning.

Treatment for osteomalacia involves providing enough vitamin D and calcium, both required to harden and strengthen (mineralize) bones, and treating underlying disorders that might cause the condition.

Symptoms

When osteomalacia is in its early stages, you might not have any symptoms, although signs of osteomalacia may be apparent on an X-ray or other diagnostic tests. As osteomalacia progresses, you might develop bone pain and muscle weakness.

The dull, aching pain associated with osteomalacia most commonly affects the lower back, pelvis, hips, legs and ribs. The pain might be worse at night, or when you put pressure on the bones, and are rarely relieved completely by rest.

Decreased muscle tone and leg weakness can cause a waddling gait and make walking slower and more difficult.

Causes

Osteomalacia results from a defect in the bone-maturing process. Your body uses the minerals calcium and phosphate to help build strong bones. You might develop osteomalacia if you don't get enough of these minerals in your diet or if your body doesn't absorb them properly. These problems can be caused by:

- **Vitamin D deficiency.** Sunlight produces vitamin D in your skin. People who live in areas where sunlight hours are short or eat a diet low in vitamin D can develop osteomalacia. Vitamin D deficiency is the most common cause of osteomalacia worldwide.

- **Certain surgeries.** Normally, the stomach breaks down food to release vitamin D and other minerals that are absorbed in the intestine. This process is disrupted if you have surgery to remove part or all of your stomach, and can result in vitamin D and calcium deficiency. Surgery to remove or bypass your small intestine also can lead to vitamin D and calcium deficiency.
- **Celiac disease.** In this autoimmune disorder, consuming foods containing gluten, a protein found in wheat, barley and rye, can damage the lining of your small intestine. A damaged intestinal lining doesn't absorb nutrients well, and can lead to vitamin D and calcium deficiency.
- **Kidney or liver disorders.** These organs are involved in activating vitamin D in your body. Problems with your kidneys or liver can interfere with your body's ability to make active vitamin D.
- **Drugs.** Some drugs used to treat seizures, including phenytoin (Dilantin, Phenytek) and phenobarbital, can cause severe vitamin D deficiency and osteomalacia.

Risk factors

The risk of developing osteomalacia is highest in people who have both inadequate dietary intake of vitamin D and little exposure to sunlight, such as older adults and those who are housebound or hospitalized.

Complications

If you have osteomalacia, you're more likely to break bones, particularly those in your ribs, spine and legs.

Prevention

Osteomalacia caused by inadequate sun exposure or a diet low in vitamin D often can be prevented by getting enough vitamin D.

- **Eat foods high in vitamin D.** Foods naturally rich in vitamin D include oily fish (salmon, mackerel, sardines) and egg yolks. Also look for foods fortified with vitamin D, such as cereal, bread, milk and yogurt.
- **Take supplements, if needed.** If you don't get enough vitamins and minerals in your diet or if you have a medical condition affecting the ability of your digestive system to absorb nutrients properly, ask your doctor about taking vitamin D and calcium supplements.

Unprotected sun exposure can increase your risk of skin cancer. There's no consensus among experts about what amount of sun exposure is safe and enough to prevent or treat osteomalacia.

By Mayo Clinic Staff

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