

INTERVIEW

Falls in the elderly can have fatal consequences

A targeted improvement of the neuromuscular function and bone stability through calcium/vitamin D can prevent fractures.

For many elderly patients a femoral neck fracture can mean the beginning of a long life of suffering and the end of independent living. Frequently, the bone is affected by osteoporosis and seems to break - also because of the increasing muscle loss - as a result of minor traumas. Dr. Peter Bernecker, from the Geriatrics Centre in Wien-Baumgarten, explains why a calcium/vitamin D substitution can effectively prevent falls.

ärztemagazin: Can you summarise the basic biochemical principles behind the use of vitamin D?

Bernecker: Vitamin D is not really a vitamin. Some call it a vitamin D hormone because it belongs to the steroid group. Calcitriol is the biologically active substance which is produced naturally in the body. Vitamin D₃ is produced in the skin from dehydrocholesterol after exposure to UV radiation and, to a small extent - maximum 20% of the requirement - obtained from the food. With the help of parathormone, vitamin D is then converted first in the liver and then in the kidney into the active vitamin D₃. The active vitamin D₃ is necessary for the resorption of calcium from the gut and to ensure the incorporation of sufficient calcium into the bones and, with it, for a preservation of the calcium xxxx [illegible].

ärztemagazin: Which are the clinically relevant consequences of vitamin and calcium deficiency?

Bernecker: Vitamin D deficiency leads to a reduced absorption of calcium; this results in an increased production of parathormone in the sense of a secondary hyperparathyroidism and, with it, an increased bone resorption - ultimately leading to an increased fracture rate.

But muscular effects are also known: Vitamin D deficiency leads to a decrease of the rapidly contracting muscle fibres and, in combination with calcium deficiency, to a worsening of the neuromuscular function. This increases the risk of falling, especially in elderly people, which then increases the risk of fractures. It is also known that vitamin D deficiency also poses a risk for other diseases, such as colon, breast, and prostate carcinoma, as well as in autoimmune diseases such as diabetes and infections.

ärztemagazin: Should we therefore not substitute more often?

Bernecker: A generous vitamin D substitution is probably a sensible measure, especially in the winter months and for people over 65. It will, though, be necessary to conduct a study to this subject in order to prove the effects, especially also on the abovementioned malignomas. This, however, is not possible due to financial reasons. Nonetheless: for patients in care institutions who have been diagnosed with osteoporosis the situation is very clear and they should be substituted.

ärztemagazin: Does a vitamin D/calcium substitution also have an effect on prophylaxis of falls?

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Bernecker: Absolutely! Evidence has been provided in clear studies which show that a decrease in femur neck fractures and falls can be achieved in vitamin D deficient people living in old people's homes through substitution with calcium and vitamin D. This relates to a great extent to the muscular effect and has resulted in the fact that the "normal" vitamin D level is no longer regarded as normal. This is because from a vitamin D level of half the "normal value", a worsening of the muscular function can be observed. Today we talk about vitamin D deficiency when the level is below the normal value, but are also aware of the fact that vitamin D deficiency can exist even within the normal range.

ärztemagazin: Are there other ways to avoid falls?

Bernecker: Physical exercise is a good way to avoid falls and improve the muscular situation. One should not forget that the survival of geriatric patients is clearly determined by their mobility. No complicated physical therapy programs are necessary; the main thing is that elderly people understand the need for regular exercises and that they carry them out on a daily basis. Tai-Chi is very good in this regard and evidence shows that. Obviously, all other fall risks, such as degrading vision, cardiac insufficiency, psychotropic medication, cardiac rhythm disorders, environmental influences and "fall traps" at home need to be evaluated and, if necessary, treated and adapted.

ärztemagazin: Thank you for your time!

[Figure:]

Bernecker: "Vitamin D insufficiency can also be found within the normal range"