Insufficient vitamin D levels in CLL patients linked to cancer progression and death

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Researchers at Mayo Clinic have found a significant difference in cancer progression and death in chronic lymphocytic leukemia (CLL) patients who had sufficient vitamin D levels in their blood compared to those who didn't.

In the Mayo Clinic study, published online in the journal *Blood* (http://bloodjournal.hematologylibrary.org/), the researchers found that patients with insufficient levels of vitamin D when their leukemia was diagnosed progressed much faster and were about twice as likely to die as were patients with adequate levels of vitamin D.

They also found solid trends: increasing vitamin D levels across patients matched longer survival times and decreasing levels matched shortening intervals between diagnosis and cancer progression. The association also remained after controlling for other prognostic factors associated with leukemia progression.

The finding is significant in a number of ways. For the first time, it potentially offers patients with this typically slower growing form of leukemia a way to slow progression, says the study's lead author, Tait Shanafelt, M.D., a hematologist at Mayo Clinic in Rochester, Minn.

"This finding may be particularly relevant for this kind of leukemia because although we often identify it at an early stage, the standard approach is to wait until symptoms develop before treating patients with chemotherapy," Dr. Shanafelt says. "This watch and wait approach is

difficult for patients because they feel there is nothing they can do to help themselves."

"It appears vitamin D levels may be a modifiable risk factor for leukemia progression. It is simple for patients to have their vitamin D levels checked by their physicians with a blood test," he says. "And if they are deficient, vitamin D supplements are widely available and have minimal side effects."

While the researchers have not yet determined if vitamin D replacement in patients with initially low levels will reverse the more rapid progression associated with insufficiency, they are planning a study to explore that hypothesis.

This research adds to the growing body of evidence that vitamin D deficiency is a risk factor for development and/or progression of a number of cancers, the researchers say. Studies have suggested that low blood vitamin D levels may be associated with increased incidence of colorectal, breast and other solid cancers. Other studies have suggested that low vitamin D levels at diagnosis may be associated with poorer outcomes in colorectal, breast, melanoma and lung cancers, as well as lymphoma.

Replacing vitamin D in some patients has proven to be beneficial, the researchers say. For example, they cite a placebo-controlled clinical trial that found women who increased their vitamin D intake reduced their risk of cancer development.

Vitamin D insufficiency, in general, is widespread, Dr. Shanafelt says. "Between one-fourth and one-half of patients seen in routine clinical practice have vitamin D levels below the optimal range, and it is estimated that up to 1 billion people worldwide have vitamin D insufficiency," he says.

Vitamin D is obtained from skin exposure to sunlight, from certain foods (fatty fish and eggs) and from supplements.

In this study, the research team, including physicians at the University of Iowa, enrolled 390 CLL patients into a prospective, observational study. They tested the blood of these newly diagnosed patients for plasma concentration of 25-hydroxyl-vitamin D and found that 30 percent of these CLL patients were considered to have insufficient vitamin D levels, which is classified as a level less than 25 nanograms per milliliter.

After a median follow-up of three years, CLL patients deficient in vitamin D were 66 percent more likely to progress and require chemotherapy; deficient patients also had a two-fold increased risk of death.

To confirm these findings, they then studied a different group of 153 untreated CLL patients who had been followed for an average of 10 years. The researchers found that about 40 percent of these 153 CLL patients were vitamin D deficient at the time of their diagnosis. Patients with vitamin D deficiency were again significantly more likely to have had their leukemia progress and to have died, Dr. Shanafelt says.

"This tells us that vitamin D insufficiency may be the first potentially modifiable risk factor associated with prognosis in newly diagnosed CLL," he says.

Provided by Mayo Clinic