



LETTER TO EDITOR

Linkage Between Serum Vitamin D and Precancerous Colon Polyps: Letter to Editor

Syeda Faryal Fatima¹, Syed Zawahir Hassan¹, Sadaf Karrar Khan², Atiqa Bhali²

¹ Internal Medicine Department, Dow University of Health Sciences, Karachi, Pakistan

² Research fellow in Medicine Department, Maharashtra University of Health Science, Maharashtra, India

* **Corresponding Author:** Syed Zawahir Hassan,
Email: drzawahir@gmail.com

Received: Nov 18, 2018

Accepted: Dec 12, 2018

Published: Sep 05, 2019

Conflicts of interest: None

Funding: None

Dear editor

Colon cancer is the third most common cancer in the U.S. and accounts for 11% of all cancer deaths in a year (Center for Disease Control and American Cancer Society) (1). Thus, it is important to identify strategies that reduce its incidence (1). Calcitriol (1,25D3), the most active form of vitamin D, is a pleiotropic hormone having a wide range of biological activities (1, 2). It plays a major role in bone health due to its ability to regulate calcium and phosphate metabolism (2). In addition, 1,25D3 binds to vitamin D receptor and regulates the expressions of various genes that control the growth, differentiation, and survival of cancer cells (2,3). In addition, recent studies have suggested that vitamin D has a much broader range of biological functions, including potential anti-neoplastic effects (1-3). In 1980, Garland et al. discovered that the mortality rates of colon cancer in the U.S. were the highest in those populations that were exposed to the least amount of sunlight (3). Thus, they proposed that vitamin D might be a protective factor against colon cancer. Since then, extensive studies have reported anti-neoplastic actions of vitamin D, particularly in colorectal cancer (3).

Some earlier studies have shown that calcium can help prevent adenomatous polyps. However, a large trial led by researchers from several research centers in the U.S. found evidence that calcium supplementation (with or without vitamin D supplementation) may be associated with certain types of polyp, or precancerous growths, in the colon or rectum (2-4). Their findings also showed that calcium supplementation increased the risk of precancerous serrated polyps (3). In particular, women and smokers who took calcium supplements were at risk for developing serrated polyps 6 to 10 years after beginning their supplementation (4). In their trial, when patients aged 45–65 years were followed up for 3–5 years, there was no evidence of calcium

affecting the incidence of serrated polyps. However, at the end of 3rd colonoscopy, i.e., 6–10 years after starting calcium supplementation, an increased incidence of serrated polyps was observed (5).

Sessile serrated polyps are, therefore, an important target of colon cancer screening, but they are more difficult to detect on colonoscopy, compared to adenomatous polyps, due to their flat shape and subtle appearance (2). Investigators detected serrated polyps in 27.5% of participants in the treatment phase, 29.7% participants in the observational phase, and a total of 211 sessile serrated adenomas or polyps during follow-up (3). They found that calcium or vitamin D supplementation had no effect on the incidence of sessile serrated adenomas or polyps during the treatment phase (3, 4). However, during the observational phase, the risk for developing these lesions was significantly correlated with calcium supplementation and/or combined calcium and vitamin D supplementation (3). Vitamin D alone did not appear to be associated with an increased risk for these lesions. However, further studies are recommended to confirm these results, which may have important implications for colorectal cancer screening and prevention (2).

Meanwhile, studies have suggested that in people who have, or have ever had, precancerous serrated polyps, particularly women, there was no association between vitamin D alone and the risk of serrated polyps (3). It is also suggested that polyps are linked with only supplementation and not dietary calcium. Hence, women can avert these risks by avoiding calcium and vitamin D supplements. In support, the comparison between smokers and non-smokers revealed that the current smokers had a significantly higher risk for any serrated polyp when taking calcium supplements (4, 5). "Therefore, it is suggested that vitamin D and calcium supplementation should only be considered for an appropriate medical indication. Those who take the supplements for a medical reason, e.g., weakened bones, should consider undergoing regular colonoscopy to avoid the associated risks."

It is concluded that calcium and vitamin D supplementation have certain beneficial effects on bone health, etc. Many people take low doses of calcium in multivitamins that are unlikely to be harmful. However, the association between calcium and vitamin D supplementation and precancerous growths does not necessarily negate the other benefits of these supplements. Further studies are needed to confirm

these associations. But for some patients, including those with a history of serrated polyps and/or smokers, data from these evidences could alter the balance of risks and benefits of calcium supplementation. These possible risks must be weighed against the benefits of calcium and vitamin D supplementation.

ACKNOWLEDGMENTS

None

AUTHER CONTRIBUTIONS

All authors equally contributed in this study

CONFLICT OF INTEREST

There is no conflict of interest regarding the publication of

ETHICAL STANDARDS

None

REFERENCES

1. Juniku-Shkololli A, Manxhuka-Kerliu S, Ahmetaj H, Khare V, Zekaj S. Expression of immunohistochemical markers of progression in pre-cancerous and cancerous human colon: Correlation with serum vitamin D levels. *Anticancer research*. 2015 Mar 1;35(3):1513-20.
2. Dou R, Ng K, Giovannucci EL, Manson JE, Qian ZR, Ogino S. Vitamin D and colorectal cancer: molecular, epidemiological and clinical evidence. *British Journal of Nutrition*. 2016 May;115(9):1643-60.
3. Weingarten MA, Trestioreanu AZ, Yaphe J. Dietary calcium supplementation for preventing colorectal cancer and adenomatous polyps. *Cochrane database of systematic reviews*. 2008(1).
4. Crockett SD, Barry EL, Mott LA, Ahnen DJ, Robertson DJ, Anderson JC, Wallace K, Burke CA, Bresalier RS, Figueiredo JC, Snover DC. Calcium and vitamin D supplementation and increased risk of serrated polyps: results from a randomised clinical trial. *Gut*. 2019 Mar 1;68(3):475-86.