Vitamin D and Cancer
What is Vitamin D

- Vitamin D refers to a group of prohormones and their metabolites.
- Promotes reabsorption of Ca+2 and K+ from kidneys
- Promotes bone mineralization
- Affects immune system by promoting phagocytosis, anti-tumor activity and immunomodulation.
- Regulates over 200 genes.
How do we get Vitamin D

- We get a small amount of Vitamin D through dietary sources (ex. fatty fish, eggs and fortified foods)
- The majority of our Vitamin D is obtained through biochemical synthesis from exposure to sunlight.
- To illustrate this, a fair skinned sunbather gets about 20000 IU of Vitamin D from 30 min of sunbathing. This is about 200 glasses of milk or 50 regular multivitamin tablets.
Why do we care about Vitamin D

- Most US citizens are Vitamin D deficient.
- In a randomly controlled trial, a low dose of Vitamin D was enough to reduce the total mortality rate by 7%.
- Statins significantly increase Vitamin D levels, so a large proportion of statin mortality reduction may be due to Vitamin D.
- The current recommendations are based on old literature; they are concerned primarily with the minimum amount needed for bone health and not with any of the other benefits of Vitamin D.
Can Vitamin D Prevent Cancer?

- Although, skin cancer is associated with too much UVR, other cancers could result from too little.
- Living at higher latitudes increases the risk of dying from Hodgkin lymphoma, breast, ovarian, colon, pancreatic, prostate and other internal cancers.
- Men and women regularly exposed to more sunlight are less likely to die of cancer.
How Vitamin D Fights Cancer

- The production of 1,25(OH)2D is thought to regulate 200 genes, which help control cell growth and cell differentiation.
- 1,25(OH)2D3 has been shown to inhibit cancer cell growth, induce cancer cell maturation and induce apoptosis.
- Vitamin D also has an immunomodulatory effect, stimulating the immune system.
Can Vitamin D Prevent Cancer?

- Although, skin cancer is associated with too much UVR, other cancers could result from too little.
- Living at higher latitudes increases the risk of dying from Hodgkin lymphoma, breast, ovarian, colon, pancreatic, prostate and other internal cancers.
- Men and women regularly exposed to more sunlight are less likely to die of cancer.
How much is enough?

- Adults with levels less than 50 nmol/L had a 30-50% increased cancer risk.
- Studies seem to show that 40-70 ng/mL is the optimal range for health.
- Men who ingested >400 IU vitamin D had about 50% reduced risk.
- Postmenopausal women who ingested 1100 IU and 1000 mg Ca for 4 years reduced their cancer risk by 60%.
Vitamin D Deficiency

- Most of us are Vitamin D deficient
- More body mass requires more Vitamin D
- Vitamin D is fat soluble, so it is taken up by fat.
- Average levels are 10 ng/mL, while optimal levels are 40-70 ng/mL.
- To reach these levels, up to 50000 IU may be required for the first 1-2 weeks and maintenance may require 2000-8000 IU, depending on how much sunlight is available.
- Vitamin D is toxic above 100 ng/mL, so levels/intake should be monitored carefully.
Works Cited

Cannell, John J., and Bruce W. Hollis. "Use of Vitamin D in Clinical Practice."


THE END!