



RESEARCH ARTICLE

A CASE OF HYPERTENSION WITH VITAMIN D DEFICIENCY AS ETIOLOGY

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Abstract

Vitamin D deficiency was found to be rare cause of hypertension in a young female as no other cause was obvious on laboratory and other clinical investigations, so this can lead to conclusions that Vitamin D is a major factor for Calcium absorption, as an immunomodulator and to prevent hypertension in young if there is not any other clinical cause or risk factors.

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Introduction:-

Hypertension (HTN) or high blood pressure is one of the most chronic and deadliest disorders in the world.

- There are many risk factors responsible for HTN which include age, race, using tobacco, high salt intake, etc.
- One of the risk factors we would like to highlight is low vitamin D levels.
- While there is strong evidence that Vitamin D plays an important role in maintaining bone and muscle health, there has been recent debate regarding its role in hypertension.
- However, there are many studies that have shown an indirect relation between 25-hydroxyvitamin D serum level and blood pressure.

Case History

- A 15 year 8 months old female patient presented to the department with history of high grade fever with chills, vomiting, involuntary movements and stiffness of limbs, up rolling of eyes and frothing from mouth.
- No family history with similar complaints.
- On examination, patient showed puffiness of face, pallor, pedal edema.
- Blood pressure was 162/100 mmHg.
- In laboratory investigations, we did not find any abnormality except for lower serum Vitamin D3 levels.
- Vitamin D3 level was 8.95ng/mL which was much lower than the reference range (<15ng/dL for 12 months to 21 years of age).
- Hemoglobin was 8.5g/dL.
- On 2D echocardiography and colour Doppler no abnormality was reported.
- Provisional diagnosis of seizure disorder was made.
- Patient was kept on injLevera, Inj Mannitol and tab Nicardia R and capsule vitamin D3.
- The differential diagnosis of epilepsy was made. On MRI diagnosis of PRES was suggested.
- It was excluded after getting normal ANA and TFT values.
- Renal colour Doppler was normal.
- The diagnosis of Hypertension was done and treatment was continued and strict BP control.
- Coconut water is also advised three times a day.

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- Patient was discharged after 2 weeks with symptomatic improvement.

Role Of Vitamin D In Maintaining Blood Pressure**Discussion:-**

- Vitamin D₃ is one of the most active forms of vitamin D with the highest biometabolic rate. It is synthesized in skin by ultraviolet radiation and is less obtained from usual diet.
- Numerous studies have attempted to explain the possible mechanisms of vitamin D deficiency that induced hypertension.
- Presently, there are 3 mainstream theories: First, it is that the renin- angiotensin-aldosterone system (RAAS) is activated.
- The second is vitamin D deficiency leads to hyperparathyroidism and high PTH level causes hypertension.
- The last is that vitamin D deficiency causes endothelial dysfunction which affects the vasodilation and then raised blood pressure. It suggests that vitamin D deficiency might be a risk factor of hypertension.
- The NHANES III data analyses showed an inverse association between blood pressure and vitamin D concentration.
- Increasing vitamin D level in the blood directly or indirectly has been shown to reduce blood pressure in some studies.

Conclusions:-

- Since both hypertension and vitamin D deficiency are highly prevalent worldwide, establishing an association among these two may potentially have wide public health implications.
- Present case is a unexpected and unique example for the physicians to raise their horizon of diagnosis.