



SEVERE CHRONIC VITAMIN B6, B12 AND FOLIC ACID DEFICIENCY PRESENTING AS DEEP VEIN THROMBOSIS

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ABSTRACT

Internal Medicine is a faculty that's a rich mining field for unusual presentations. Interpreting "what appears" correctly and connecting it to "what really is", is the challenge; both being equally important. We present an interesting case in which there was a "not-unusual" presentation but turned out to have a "not routinely thought of" pathogenesis.

KEYWORDS : Hyperhomocystinemia, Deep Vein Thrombosis, Pulmonary Embolism, Clinical presentation of Vitamin B12 deficiency.

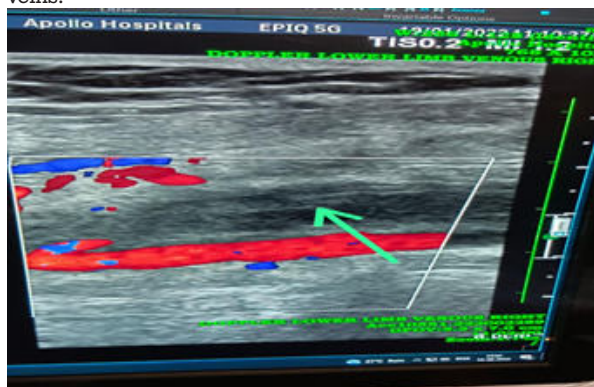
CASE REPORT:

A 21 year old male student presented with complaints of right lower limb pain and swelling since 12 days. Massage along with application of bandage to the area was done a week ago, resulting in worsening of the symptoms. He was admitted at Apollo Hospital for further management.

O/E:

There was right lower limb swelling with cellulitis and he was in obvious pain. Pulse: 102/min, BP: 120/70, Spo2: 97% on room air. There were hyper pigmented lesions all over his body, especially both temples, face, axillae, neck and lower trunk. He had been seeing a dermatologist for these lesions and was applying melanolytic creams.

Lower limb Doppler was s/o mild subcutaneous edema around the ankle joint with an echogenic thrombosis resulting in non-compressibility of right superficial femoral, popliteal and posterior tibial veins with no color flow. An urgent right lower limb CT angiography confirmed an acute thrombosis of the right superficial femoral, deep femoral and popliteal veins.



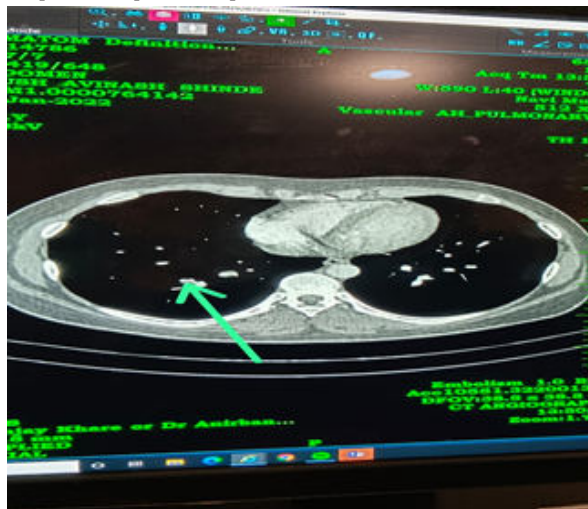
Detailed thrombophilia and connective tissue work up was initiated along with JAK-2, Hb-Electrophoresis and PNH tests.

He had had similar symptoms 6 months ago, thus making this the second episode of unprovoked DVT. Treatment with IV Plasmalyte and Tab Rivaroxaban 15mg BD was initiated.

COURSE:

On Day 2 of admission, patient's tachycardia worsened (P: 124/min) with fluctuating oxygen saturation levels (Spo2: 93%-95%). His CT-pulmonary angiography denoted right lower lobe sub segmental artery thrombus, confirming our

suspicions of pulmonary embolism (PE).



In addition to ongoing signs and symptoms, patient also developed fever (99.5) with flaring up of the inflammation over the right lower limb, in view of which Inj Monocef 1gm IV BD was started.

In view of DVT plus PE on background of hyper pigmented lesions, we thought of hyperhomocystinemia secondary to Vit B12 deficiency. B12 levels turned out to be pathetically low (less than 83; machine unable to read below this). He was started on Methyl cobalamin injections (2ml=2000 mcg in 50 ml NS over 30 minutes once a day) along with Tab Folic Acid 5mg OD.

On Day 4, tachycardia settled and patient's symptoms improved considerably. He was discharged on oral Rivaroxaban 15 mgs BD with Folic acid 5 mgs.

Table Of Investigation:

Investigation	Results
TrueNAAT Covid -19	Negative
Hb	12.0gm%
WBC	10550/mm3
Platelet	258000/mm3
TSH	1.20mIU/ml
Na/K/Cl	134/3.9/99mEq/L
Sr Creatinine/ BUN	0.80/ 11 mg/dl
SGOT/SGPT	25/24 U/L

T.Bilirubin/D.Bilirubin/I.Bilirubin	0.84/ 0.23/0.59 mg/dl
Alkaline Phosphate	68u/l
S.Cholesterol/S.Triglyceride/LDL/HDL/VLDL	89/57/63/25/11 mg/dl
D-dimer	4.81 microgm/ml
PT/INR	29.4/2.21
S.Folic Acid	7.3 microgm/L
S.Vitamin B12	<83pg/l (lowest value machine can detect)
ANA by IFA	Negative
Beta-2 Glycoprotein IgG&IgM	Negative
Fetal Hb/ HbA2/HbA	<0.8/ 2.7%/94.1% (no hemoglobinopathies)
Protein C Antigen	53.92% (65-410)
Homocysteine	> 50 micromol/l (5.46-16.2)
Lupus Anticoagulant	Present
Cardiolipin Antibody ACL-IgM/IgG	Negative
Protein C activity	64 % (70%-130%)
Protein S Activity	83% (77%-143%)
Protein S Antigen (free)	143 % (89.5%-128.5%)
Anti Thrombin 3 Antigen	97% (80-120%)
APCR-Activated Protein C Resistance	170.3sec
JAK-2 Mutation Detection	Negative

Follow up:

He has been following up in OPD regularly and has recovered totally. The swelling and cellulitis has abated completely. Follow up Doppler has shown recanalization of the thrombus.

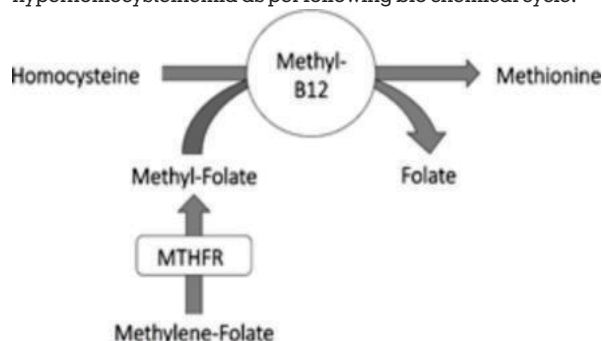
DISCUSSION:

Venous Thromboembolism is not at all as uncommon as supposed. Amongst vascular disorders, its frequency ranks just after myocardial Infarction and Cerebrovascular Accident¹. Deep venous Thrombosis and Pulmonary Embolism have an occurrence of 1/1000 per year. [Men>Female]². As many as 30% of cases of DVT might go on to develop pulmonary embolism. Following are the risk factors/associated factors. Post-partum/post procedure with/without hormonal usage^{3, 4}, malignancies⁵, obesity⁶, inherited and acquired disorder of hyper coagulation⁷ and elevated homocysteine levels⁸.

Elevated homocysteine levels cause inflammation and oxidative stress and lead to clot formation by interfering with the activation of Va coagulation factor by activation of C protein.

B12 deficiency is rampant in our country and must be thought of much more frequently than it is, now. The prevalence is 31.40% to 74.90%.⁹

Vit B12 plays a very important role in prevention of hyperhomocysteinemia as per following bio chemical cycle.



In this case, the gross hyperpigmentation along with DVT was a dead giveaway. This case is being presented to highlight the importance of clinical suspicion of Vit B12 deficiency.

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