Uncommon manifestations of Vitamin B<sub>12</sub> deficiency

Sir,

Vitamin B<sub>12</sub> (vitB<sub>12</sub>) deficiency is known to cause symptoms related to all the systems of human body. We present here a patient of vitB<sub>12</sub> deficiency with rare combination of acute exacerbation of psychiatric manifestations, brain atrophy, severe anemia with coronary insufficiency, and premature graying of hair, all of which disappeared with
vitB\textsubscript{12} therapy, except the graying of hair. In addition, the necessity of early detection and treatment of the disease is emphasized.

A 55-year-old man presented in our outpatient department, with complaints of irrelevant talk for 10 days. Fifteen days back, while he was visiting his psychiatrist, he collapsed in front of the clinic, so was referred to the emergency department. He was advised coronary angiogram by the cardiologist as there was evidence of coronary insufficiency in his electrocardiogram. In the meantime, the patient developed irrelevant talk and impaired judgment for which he was referred to us to rule out organic causes.

The patient was being treated for anxiety and depression for the past 3 years and was on sertraline hydrochloride, olanzapine, and phenergan at the time of presentation before us. He was apathetic, of average built, pale, unshaven, and sick looking. His hair on the face and head was gray [Figure 1]. His memory was disturbed, judgment impaired, had a changed personality as he had become isolated, apathetic, and withdrawn. He was also unwilling to think and depressed. His peripheral smear showed megaloblastic changes. His hemoglobin was 6 g\%, total and platelet count were 3400 and 120,000/cubic millimeter of blood, respectively. His biochemical parameters were within normal limit. Computed tomography (CT) scan of his brain showed atrophy of the brain. His blood was sent for vitB\textsubscript{12} and folic acid estimation, and he was started with vitB\textsubscript{12} 1000 microgram intramuscularly once daily and olanzapine 5 mg at bedtime. His serum VitB\textsubscript{12} and folic acid value came to be 90 pg and 10 ng/ml, respectively. His weakness improved significantly with immediate effect, all other symptoms took around 1 month to improve. At the end of 1-year, his CT scan of brain, hematological and biochemical parameters became normal.

![Figure 1: Patient is waiting at outpatient department. Note the apathetic condition of the patient and graying of hair. A sebaceous cyst is present on the temple](image)

VitB\textsubscript{12} plays an important role in DNA synthesis. Its deficiency is associated with hematologic, neurologic, psychiatric, gastrointestinal, dermatologic, and cardiovascular manifestations. The vitamin is involved in the proliferation, maturation, and regeneration of neural cells. Hence, cognitive dysfunction may be a manifestation of cortical neuronal dysfunction. Deficiency of cyanocobalamin leads to accumulation of methylmalonyl-CoA and homocysteine in the serum, which are risk factors for coronary artery disease. Cyanocobalamin deficiency characteristically produces a megaloblastic picture in peripheral smear. Probably, there is a window period, when vitB\textsubscript{12} therapy can reverse the changes both in subacute degeneration of spinal cord and cognitive dysfunction.

Total vitB\textsubscript{12} estimation is cost-effective. However, serum MMA is a functional marker and a lower level of serum holotranscobalamin is the earliest marker of vitB\textsubscript{12} deficiency. They are sensitive and specific but costly. In our country, many big cities do not have laboratory facilities to estimate serum level of total vitB\textsubscript{12} and folic acid, so, we suggest, peripheral smear showing evidence of megaloblastic changes and symptoms of vitB\textsubscript{12} deficiency should prompt the clinician to start treatment with parenteral vitB\textsubscript{12} to prevent irreversible neuropsychiatric changes, however blood sample may be collected for vitB\textsubscript{12} and folic acid estimation before that.

**Declaration of patient consent**
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**
There are no conflicts of interest.

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