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A Case of Premature Hair Graying Treated with Ferrous Sulfate

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Dear Editor:

Premature graying of hair is defined as the occurrence of the hair graying before the age of 20 in whites, 25 in Asians, and 30 in Africans[1]. Premature graying of hair, known as premature canities, has been uncleared about the exact etiology. A lot of pathologic conditions have been discussed about the association with a premature canities such as hypothyroidism, vitamin B12 deficiency, vitiligo, progeroid syndromes and medications[2]. However, there are few studies about the correlation of serum mineral content and the premature graying of hair. We report a case of a premature graying of hair that responded well to ferrous sulfate medication.

An 11-year-old male presented with a 1-year history of a slowly graying of hair on the vertex of his scalp. The physical examination revealed a lot of gray colored hair admixed with normal colored hair on the scalp (Fig. 1). He didn't have any family history of premature hair graying and autoimmune diseases including alopecia areata, vitiligo, autoimmune thyroid diseases, pernicious anemia and some related rare premature syndrome manifesting premature graying of hair. The initial laboratory findings were notable for decreased serum ferritin (2.6 ng ml^{-1}; normal, 20～80) and decreased Hb level (8.4 g/dl; normal, 10～15.5) consistent with iron deficiency anemia (IDA). Two years ago, he received an operation for pyloric stenosis and this may be the main cause of provocation of IDA. Other thyroid function test, serum calcium, serum iron, vi-

Fig. 1. A lot of gray hairs admixed with normal colored hairs on the scalp.

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Fig. 2. After 5 months of ferrous sulfate supplement treatment, his hair color recovered perfectly normal black color without gray hairs.

tamin C and vitamin D levels, differential blood count were within normal range, especially. Iron supplements (oral ferrous sulfate 40 mg/day) applied for five months. After 5 months of treatment with only ferrous sulfate medication, his hairs have recovered perfectly normal black colored hair (Fig. 2). Furthermore, Decreased serum ferritin and Hb level had been recovered to near-normal range (15.1 ng ml^{-1} and 15 g/dl, respectively).

Fatemi Naieni et al.[3] reported the correlation between iron, zinc, copper serum concentrations and premature canities. The mean serum copper concentration was significantly lower in the case compared to control group. However, no difference was found in the zinc levels while the iron concentration was higher in the control group. Moreover, Bhat et al.[4] proposed that serum calcium, serum ferritin and vitamin D3 may play a role in premature graying of hair. The mean serum ferritin and serum calcium levels were significantly lower compared to control groups. A role of iron was reported in a tautomerization reaction by DOPAchrome tautomerase (DT). DOPAchrome can be converted to 5,6-dihydroxyindole-2-carboxylic acid (DHICA), which is catalyzed by the enzyme DT. Iron is binding at the inner portion of DT[5]. These studies provide evidences about the role of iron in the pathway of melanogenesis. We report a patient who had premature hair graying due to IDA and had been treated successfully with iron supplements. Previous studies haven't yet been reported about the clinical case showing that patient can be treated with iron supplement. This study is valuable in that showing the effect of iron alone to the premature canities and recovered with only ferrous sulfate actually. Therefore, when a patient present with premature hair graying, it is important to keep in mind that the laboratory test for ferritin level should be considered. Lager studies, ideally conducted prospectively, are necessary to find relevance the concentration of iron and premature canities.

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