Iron Deficiency Anemia Due to Repeated Blood Donations

Key words: iron deficiency anemia, blood donation

To the Editor: It goes without saying that the health and welfare of goodwill people should never be endangered through donation of blood. This confidence is now questioned by the following case of iatrogenic iron deficiency anemia, which we hope is not the tip of the iceberg in Japan.

A 46-year-old woman presented with easy fatigability and palpitation on exertion. She had donated blood more than 100 times, mostly 200 ml at each donation, since the age of 16. She had had pica for ice chips for 2 years. Neither nail change nor dysphagia was present. Hematological examination revealed red cell count 462×10^12/l, hemoglobin 9.8 g/dl, hematocrit 31.5%, (MCV 68.0 fl, MCH 21.2 pg, MCHC 31.1 g/dl), white cell count 5,800/μl, and platelet count 34.4×10^12/μl. The serum iron was 15 μg/dl, unsaturated iron-binding capacity 339 μg/dl, and ferritin 3.4 ng/ml. The peripheral blood smear showed hypochromic microcytic cells with anisocytosis and poikilocytosis. The patient is now being treated with iron tablets with improvement of the anemia.

Obviously, the patient’s anemia was caused by excessive blood donations. It is hard to imagine how she could be allowed to donate blood as many as 100 times or more over a period of 30 years. The average storage iron in an adult is about 1 g and this much iron would be used up to produce 2,000 ml of blood. Theoretically, therefore, the amount of blood to be donated from a given person should not exceed 2,000 ml—either 200 ml taken 10 times or 400 ml taken 5 times at appropriate intervals.

After this, there must be certain “rest” period to replenish the iron stores. Apart from testing for various blood-borne infections, the specific gravity of blood has long been used to screen the anemic donors in the Japanese blood banks. However, this method alone is unable to detect non-anemic, iron-depleted donors. It is advisable for the blood banks to adopt present-day guidelines so that these at-risk persons can be prevented from donating blood.

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