

Yasuhiro Kano, MD

Fellow, Department of General Internal
Medicine, Tokyo Metropolitan Tama Medical
Center, Fuchū, Tokyo, Japan

Blue sclera: An overlooked finding of iron deficiency

A 46-YEAR-OLD WOMAN presented with a 3-month history of progressive fatigue and shortness of breath. She had a history of uterine fibroids with heavy menstrual bleeding but had missed her gynecologic follow-up examination 2 years earlier. Physical examination revealed facial and conjunctival rim pallor, blue sclera (**Figure 1A**) with conjunctival rim pallor, and koilonychia. Laboratory tests were hemoglobin 4.0 g/dL (reference range 12–16), hematocrit 16.7% (37–47), mean corpuscular volume 54.8 fL (80–98), serum ferritin 0.8 ng/mL (24–307), and transferrin saturation 2.8% (20%–50%). Iron deficiency anemia was diagnosed.

The patient received a blood transfusion and began taking iron supplements. Her uterine fibroids were treated with oral gonadotropin-releasing hormone antagonists. Three months later, her symptoms and physical findings, including the blue sclera (**Figure 1B**), had resolved, and her hemoglobin and ferritin levels had normalized.

Blue sclera is a common and useful finding of iron deficiency but is often overlooked. In 1908, Sir William Osler first described a blue discoloration of the sclera as a symptom of anemia in young girls and wrote that the eyes “have a peculiar brilliancy and the sclerotics are of a bluish color”.¹ Kalra et al² subsequently found that blue sclera is more common in patients with iron deficiency anemia (87%) than in those with other types of anemia (7%). In adult patients, blue sclera reportedly has 87% to 89% sensitivity and 64% to 94% specificity for iron deficiency anemia and iron deficiency (ie, anemia need not always be present).^{2,3} Blue sclera has been reported in other conditions, albeit rarely, including rheumatoid arthritis, myasthenia gravis, and long-term steroid therapy.² Its pathogenesis is thought to involve

thinning of the collagen fibers of the sclera due to iron deficiency, which allows the bluish color of the underlying uvea to become visible. ■



Figure 1. (A) Bluish sclera with peculiar brilliancy and pale skin at presentation. (B) Normalized sclera color 3 months after iron supplementation therapy.

doi:10.3949/ccjm.89a.22045

■ DISCLOSURES

The author reports no relevant financial relationships which, in the context of their contributions, could be perceived as a potential conflict of interest.

■ REFERENCES

1. **Osler W.** Primary or essential anemia. In: *The Principles and Practice of Medicine*. 6th ed. New York, New York: D. Appleton and Company; 1908: 721–724.
2. **Kalra L, Hamlyn AN, Jones BJ.** Blue sclerae: a common sign of iron deficiency? *Lancet* 1986; 2(8518):1267–1269. doi:10.1016/s0140-6736(86)92688-7
3. **Kotsev I, Pavlov S, Zheleva D, Gencheva T.** Sinie sklery pri zhelezo-defitsitnykh sostoianiiakh [Blue sclera in iron deficiency conditions]. *Klin Med (Mosk)* 1991; 69(8):85–86.

.....
Address: Yasuhiro Kano, MD, Department of General Internal Medicine, Tokyo Metropolitan Tama Medical Center, 2-8-29 Musashidai, Fuchū, Tokyo 183-8524, Japan; yasuhiro.kano.21@gmail.com