

# The Cabot Ring at Different Stages of Erythropoiesis in the Bone Marrow of a Leukemic Patient

## Lösemi Tanılı Hastada Eritropoezin Farklı Evrelerinde Cabot Halkası Görünümü

Atakan Turgutkaya, Ayşe Hilal Eroğlu Küçükçiler, İrfan Yavaşoğlu

Aydın Adnan Menderes University Faculty of Medicine, Department of Hematology, Aydın, Türkiye

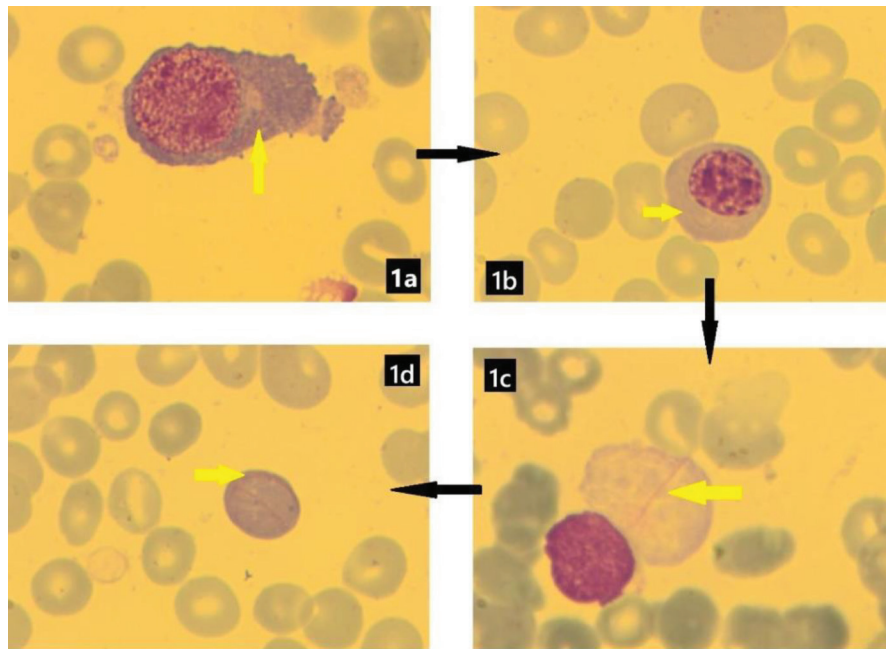


Figure 1. a-d) Cabot ring appearance at different stages of erythropoiesis (yellow arrows).

Cabot rings are red cell inclusions and may be looped or eight-shaped. They are seen in cases of pernicious anemia and other severe anemias, leukemias, and lead poisoning. They may be remnants of the mitotic spindle and are associated with adherent granular material containing arginine-rich histone and non-hemoglobin iron. Some researchers have suggested that they originate from spindle material that was mishandled during abnormal mitosis. Although the Cabot ring is usually seen in mature erythrocytes in peripheral blood, it has also been described in late-intermediate bone marrow megaloblasts [1,2]. We present a case of acute myeloid leukemia (AML) in which a

Cabot ring was observed in different stages of erythropoiesis in bone marrow aspiration (BMA) materials.

In a 53-year-old male patient diagnosed with AML with myelodysplasia-related cytogenetic abnormalities according to the 5<sup>th</sup> edition of the relevant World Health Organization guidelines [3], megaloblastic changes and a Cabot ring in several stages of erythroblasts and erythrocytes were observed in BMA materials (Figure 1). No Cabot ring had been observed in previous bone marrow samples during diagnosis or after remission-induction. The patient's folic acid level was



Address for Correspondence/Yazışma Adresi: Asst. Prof. Atakan Turgutkaya, M.D., Aydın Adnan Menderes University Faculty of Medicine, Department of Hematology, Aydın, Türkiye  
E-mail: atakanturgutkaya@yahoo.com.tr ORCID: orcid.org/0000-0001-8428-4730

Received/Geliş tarihi: March 7, 2025  
Accepted/Kabul tarihi: May 5, 2025  
Epub: May 6, 2025



©Copyright 2025 by Turkish Society of Hematology Turkish Journal of Hematology, Published by Galenos Publishing House.  
Licensed under a Creative Commons Attribution-NonCommercial (CC BY-NC-ND) 4.0 International License.

<2.2 ng/mL (normal range: 3.1-20.5) and he had previously received cytarabine-based induction and three cycles of consolidation therapy. The Cabot ring was thought to be related to these factors. The widespread presence of a Cabot ring in different stages of erythropoiesis has not been previously described.

**Keywords:** Bone marrow, Cabot ring, Erythrocytes, Erythropoiesis, Stage

**Anahtar Sözcükler:** Kemik iliği, Cabot halkası, Eritrositler, Eritropoez, Evre

### Ethics

**Informed Consent:** Informed consent for participation was obtained from the patient.

### Footnotes

### Authorship Contributions

Surgical and Medical Practices: A.T., A.H.E.K., İ.Y.; Concept: A.T., A.H.E.K., İ.Y.; Design: A.T., A.H.E.K., İ.Y.; Data Collection or Processing: A.T.; Analysis or Interpretation: A.T., A.H.E.K., İ.Y.; Literature Search: A.T., İ.Y.; Writing: A.T.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

### References

1. Hapgood G, Roy S. A mysterious case of Dr Cabot. *Br J Haematol*. 2013;162:719.
2. Mohandas N. Structure and composition of the erythrocyte. In: Kaushansky K, Prchal JT, Press OW, Lichtman MA, Levi M, Burns LJ, Caligiuri MA (eds). *Williams Hematology*. 10<sup>th</sup> ed. Chapter 31. New York, McGraw-Hill, 2021.
3. Arber DA, Orazi A, Hasserjian RP, Borowitz MJ, Calvo KR, Kvasnicka HM, Wang SA, Bagg A, Barbui T, Branford S, Bueso-Ramos CE, Cortes JE, Dal Cin P, DiNardo CD, Dombret H, Duncavage EJ, Ebert BL, Estey EH, Facchetti F, Foucar K, Gangat N, Gianelli U, Godley LA, Gökbuget N, Gotlib J, Hellström-Lindberg E, Hobbs GS, Hoffman R, Jabbour EJ, Kiladjian JJ, Larson RA, Le Beau MM, Loh ML, Löwenberg B, Macintyre E, Malcovati L, Mullighan CG, Niemeyer C, Odenike OM, Ogawa S, Orfao A, Papaemmanuil E, Passamonti F, Porkka K, Pui CH, Radich JP, Reiter A, Rozman M, Rudelius M, Savona MR, Schiffer CA, Schmitt-Graeff A, Shimamura A, Sierra J, Stock WA, Stone RM, Tallman MS, Thiele J, Tien HF, Tzankov A, Vannucchi AM, Vyas P, Wei AH, Weinberg OK, Wierzbowska A, Cazzola M, Döhner H, Tefferi A. International consensus classification of myeloid neoplasms and acute leukemias: integrating morphologic, clinical, and genomic data. *Blood*. 2022;140:1200-1228.