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Charcot-Leiden Crystals in Acute Myeloid Leukemia with Bone Marrow Necrosis

Kemik İliğinde Yaygın Nekrozun Eşlik Ettiği Akut Myeloid Lösemi Olgusunda Charcot-Leyden Kristalleri

Neşe Yeldir[1], Taner Tan[2], Olga Meltem Akay[2], İbrahim Öner Doğan[3]

[1]Sivas Cumhuriyet University Hospital, Department of Pathology, Sivas, Türkiye
[2]Koç University Hospital, Department of Hematology, İstanbul, Türkiye
[3]Koç University Hospital, Department of Pathology, İstanbul, Türkiye

Charcot-Leiden crystals (CLCs) are microscopic crystals consisting of the protein/galectin-10 present in eosinophils and basophils. CLCs were first reported by Jean-Martin Charcot in the cardiac blood and spleen [1,2,3].

A 70-year-old man with diabetes mellitus, hypothyroidism, and hypertension had back pain for 10 days. His blood analysis revealed hemoglobin of 11.6 g/dL, leukocytes of 9800/mm^3, neutrophils of 6800/mm^3, platelets of 56000/mm^3, eosinophils of 0/mm^3, eosinophil ratio of 0.2%, lactate dehydrogenase of 936 U/L, creatinine of 0.8 mg/dL, erythrocyte sedimentation rate of 94 mm/h, and C-reactive protein of 28.7 mg/L. Lumbar magnetic resonance imaging showed several hypodense lesions in bone structures.

Bone marrow aspirate and flow cytometric materials were hypocellular. A few myeloid serial precursor cells were seen in the aspirate. Bone marrow biopsy was hypercellular and included extensive necrosis and edema. In the necrotic and perinecrotic areas, macrophage cytoplasm contained crystalloid structures with eosinophilic staining (Figures 1, 2, and 3). Myeloblasts were seen to be diffusely distributed in subcortical areas.

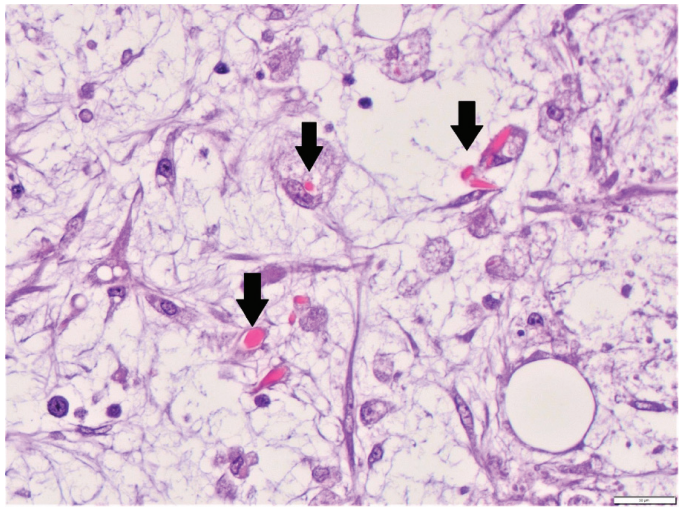

Figure 1. Bone marrow biopsy revealed necrosis, edema, stromal degeneration, foamy macrophages, scattered myeloid precursor cells, and images of Charcot-Leiden crystals (hematoxylin and eosin staining, 1000^x).

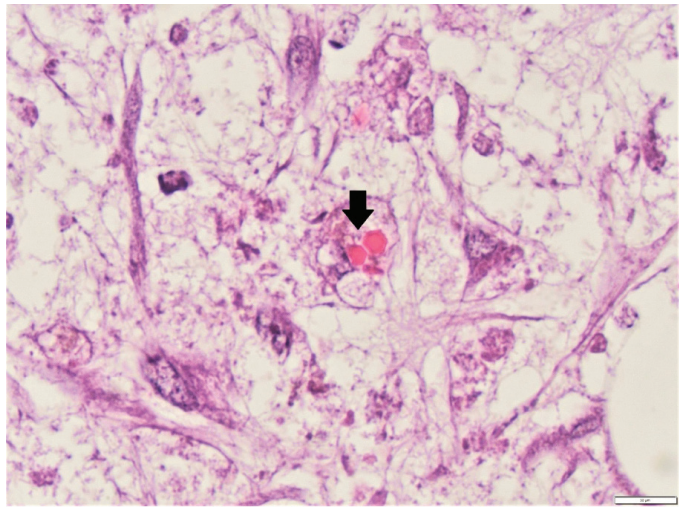

Figure 2. Charcot-Leiden crystals: crystalloid structures with eosinophilic staining in necrotic areas (hematoxylin and eosin staining, 1000^x).

Address for Correspondence/Yazışma Adresi: Neşe Yeldir, M.D., Sivas Cumhuriyet University Hospital, Department of Pathology, Sivas, Türkiye
E-mail : nese.yeldir@gmail.com ORCID: orcid.org/0000-0002-3812-6245

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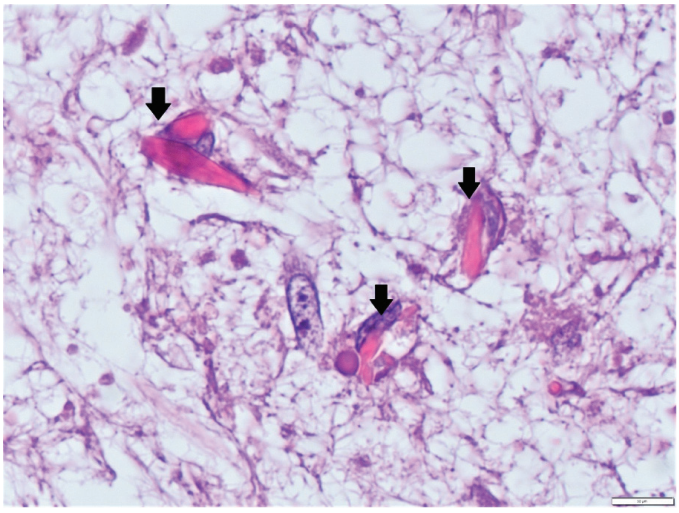

Figure 3. Charcot-Leiden crystals (hematoxylin and eosin staining, 1000x).

Immunohistochemically, these cells were positive for CD33, CD68, myeloperoxidase, lysozyme, and CD15 and negative for pancytokeratin, CD34, CD56, CD79a, CD138, CD1a, and CD3. These findings were consistent with acute myeloid leukemia (AML) and bone marrow necrosis involving CLCs. In addition, the *NPM1* c.863_864insCATG (type B) mutation was detected in the patient by DNA sequence analysis method. The patient was given induction 7+3 (cytarabine and idarubicin) therapy after the diagnosis of AML. At the end of that protocol, he died due to multidrug-resistant *Klebsiella pneumoniae* bacteremia leading to septic shock.

We present a patient who had CLCs in AML without eosinophilia. This is the first such case including CLCs in AML with *NPM1* type B mutation.

Keywords: Charcot-Leyden crystal, Acute myeloid leukemia, *NPM1* mutation

Anahtar Sözcükler: Charcot-Leyden kristali, Akut myeloid lösemi, *NPM1* mutasyonu

Ethics

Informed Consent: Obtained.

Authorship Contributions

Surgical and Medical Practices: N.Y., T.T., O.M.A., İ.Ö.D.; Concept: N.Y., O.M.A., İ.Ö.D.; Design: N.Y., T.T., O.M.A., İ.Ö.D.; Data Collection or Processing: N.Y., T.T., O.M.A., İ.Ö.D.; Analysis or Interpretation: N.Y., T.T., O.M.A., İ.Ö.D.; Literature Search: N.Y., O.M.A., İ.Ö.D.; Writing: N.Y., T.T.

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