

Images in Clinical Hematology

Critical blue-green inclusions in neutrophil and monocyte cytoplasm in a healthy patient affected by COVID-19



Guilherme Dienstmann ^{a,*}, Samuel Ricardo Comar ^b,
Matheus Leite Ramos de Souza ^c, Graziela Ruaro ^a,
Luiz Arthur Calheiros Leite ^d

^a Sociedade Educacional de Santa Catarina (UNISOCIESC), Joinville, SC, Brazil

^b Universidade Federal do Paraná (UFPR), Curitiba, PR, Brazil

^c Universidade da Região de Joinville (UNIVILLE), Joinville, SC, Brazil

^d Centro Universitário Cesmac, Maceió, AL, Brazil

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A 44-year-old male patient, healthy and without comorbidities, was diagnosed with COVID-19, dying 2 days after the observation of blue-green crystals inside neutrophils and monocytes in peripheral blood. Such crystals are described as amorphous blue-green inclusions, refringent and shiny, when stained by Romanowsky. They are generally related to severe tissue injury, such as that seen in liver failure and sepsis and, more recently, have been associated with COVID-19. They

are also known as “crystals of death”, since most patients (65%) progress quickly to death after their microscopic finding (92% within 72 h). Such inclusions have a high lipid content, which in association with their color and acidic nature, leads us to believe they are deposits of lipofuscin, which represents products of lysosomal degradation of necrotic liver cells that are phagocytized by neutrophils and monocytes (Figures 1 and 2).^{1–3}

* Corresponding author at: Rua João Alexandre de França, 349, CEP: 89225-140, Joinville, SC, Brazil.

E-mail address: guidbio@gmail.com (G. Dienstmann).

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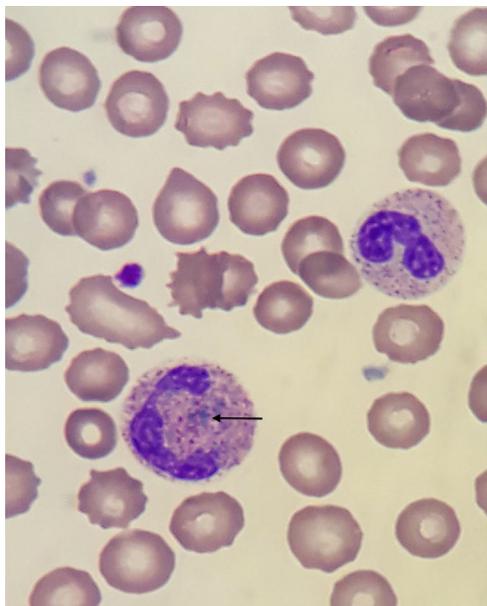


Figure 1 – Presence of blue-green inclusions in the neutrophil cytoplasm.

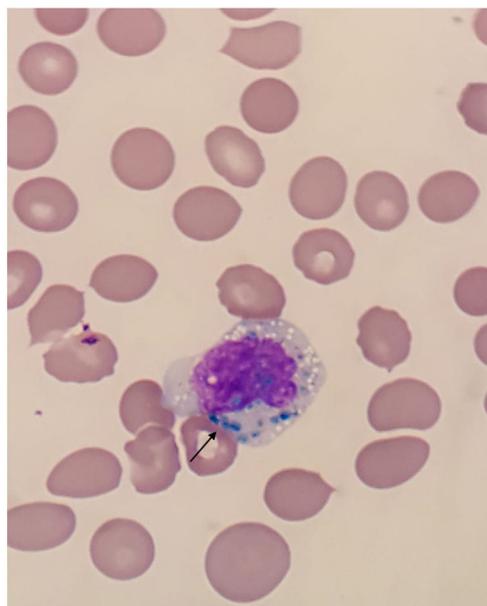


Figure 2 – Presence of blue-green inclusions in the monocyte cytoplasm.

Conflicts of interest

The authors declare no conflicts of interest.

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