Boffin Access

Open Access Journal | Volume: 1.1

Biomedical Research and Reviews

ISSN 2631-3944

Neutrophils Changed Appearance with a New Heart

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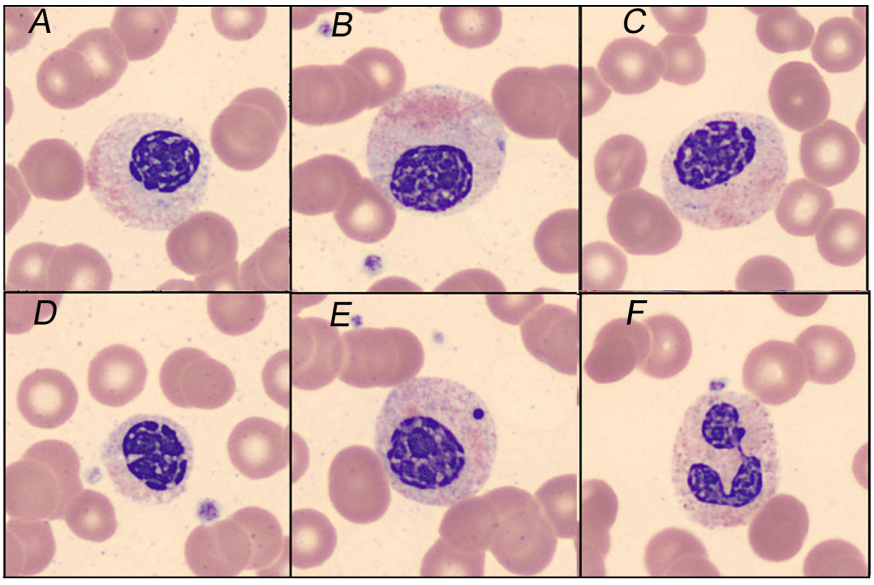
Clinical Image

A 4-year-old girl was found to have 50.8% "immature granulocytes" and 12% neutrophils in her peripheral blood. She had had a heart transplant for dilated cardiomyopathy nine months before. A peripheral blood film revealed many non-segmented neutrophils with round or oval nuclei, clumped nuclear chromatin, and adequate cytoplasmic granules (Figure 1, panels A- E). The size and nuclear-to-cytoplasmic ratio were comparable to those of segmented neutrophils (Figure 1, panel F). There were occasional Döhle bodies (panel B) and Howell–Jolly bodies (panel E). Neutrophil morphology had been normal before the use of tacrolimus for prevention of graft-versus-host disease. Pseudo-Pelger-Huët anomaly (PPHA) was diagnosed, and the differential white cell count was corrected.

PPHA is a dysplastic neutrophilic morphology seen in myeloid malignancies or certain benign conditions. PPHA has been reported in transplant recipients, especially after taking immunosuppressive drugs, tacrolimus and/or mycophenolate mofetil. Benign PPHA is reversible and the hyposegmented neutrophils function normally. It is clinically significant to recognize this morphologic change of neutrophils, and not to count these cells as immature granulocytes or bands.



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Article Information

DOI: 10.31021/brr.20181105
Article Type: Clinical Image
Journal Type: Open Access
Volume: 1 **Issue:** 1
Manuscript ID: BRR-1-105
Publisher: Boffin Access Limited

Received Date: 13 July 2018
Accepted Date: 28 August 2018
Published Date: 30August 2018

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Citation: Li W, Sharma M. Neutrophils Changed Appearance with a New Heart. Biomed Res Rev.2018 Aug;1(1):105

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