

INTRODUCTION

A 55-year-old woman, without significant medical history, presented with malaise, fever, myalgias and arthralgias 3-day after a trip to Martinique, in the eastern Caribbean Sea. Laboratory investigations showed bicytopenia (leukocytes $1.9 \times 10^9 /l$; monocytes $0.15 \times 10^9 /l$, lymphocytes $0.32 \times 10^9 /l$, platelets $121 \times 10^9 /l$). Haemoglobin was in the normal range (haemoglobin 132 g/L).

Due to Dengue outbreak in Martinique, a screening test detecting NS1 Antigen was performed and resulted positive. Dengue antibodies IgM and IgG were negative. Molecular testing via polymerase chain reaction revealed a Dengue viral load of 10 million copies/ml, confirming a primary acute Dengue infection.

METHODS

The peripheral blood film on the stand-alone Digital Imaging System CellaVision® DC-1 (CellaVision AB, Sweden) showed platelets satellitism around granulocytes (A: polymorphonuclear neutrophils with platelets on the surface, May-Grünwald-Giemsa stain, x 100 objective, total magnification x 1000). At the same time, platelets merging with neutrophil granulocytes and attracting other granulocytes were observed (B: platelets merge with granulocytes). Granulocytes with internalised and phagocytosed platelets showing multiple vacuoles are also seen (C: granulocytes with platelets in the cytoplasm). The patient received a supportive therapy and remained stable without other treatments. No organ dysfunction, bleeding nor haemorrhagic shock were observed. After one-week all symptoms resolved completely.

RESULTS

Platelets satellitism is a phenomenon in which platelet arrange themselves on the surface of other cells. It is generally observed in peripheral blood smears of normal subjects prepared from blood samples anti-coagulated with EDTA, in which platelets rosette around polymorphonuclear neutrophils. This rare phe-nomenon is frequently triggered in-vitro by EDTA in the presence of cryptic antibodies forming bridges between the glycoprotein IIb/IIIa complex of the platelet membrane and the neutrophil Fc gamma (FcγRIII) receptor. Commonly seen in EDTA, but not in samples treated with heparin or sodium citrate, platelets satellitism represents an in-vitro cause of thrombocytopenia, i.e. pseudothrombocytopenia, without clinical consequences. This phenomenon has also been observed in patients with vasculitis, lupus, mantle cell lymphoma, marginal zone B-cell lymphoma and chronic liver disease.

CONCLUSIONS

In case of viral infection, thrombocytopenia can develop through several mechanisms. In Dengue infection platelets satellitism represents the first step in platelets clearance through phagocytosis. It is also an in-vivo and not only an in-vitro phenomenon.

Dengue virus - a mosquito-borne human viral pathogen - binds on the receptor dendritic cell-specific intercellular adhesion molecule 3-grabbing non-integrin (DC-SIGN), which is present on the primary target represented by dendritic cells and also by platelets. The binding between Dengue virus and platelets enhances phosphatidylserine expression by platelets, leading to apoptosis and to phagocytosis by macrophages.

This remarkable case shows that the sequentially binding of infected platelets around granulocytes, the internalisation and the phagocytosis process happens in vivo in the absence of antibodies.

Platelets phagocytosis in acute Dengue infection

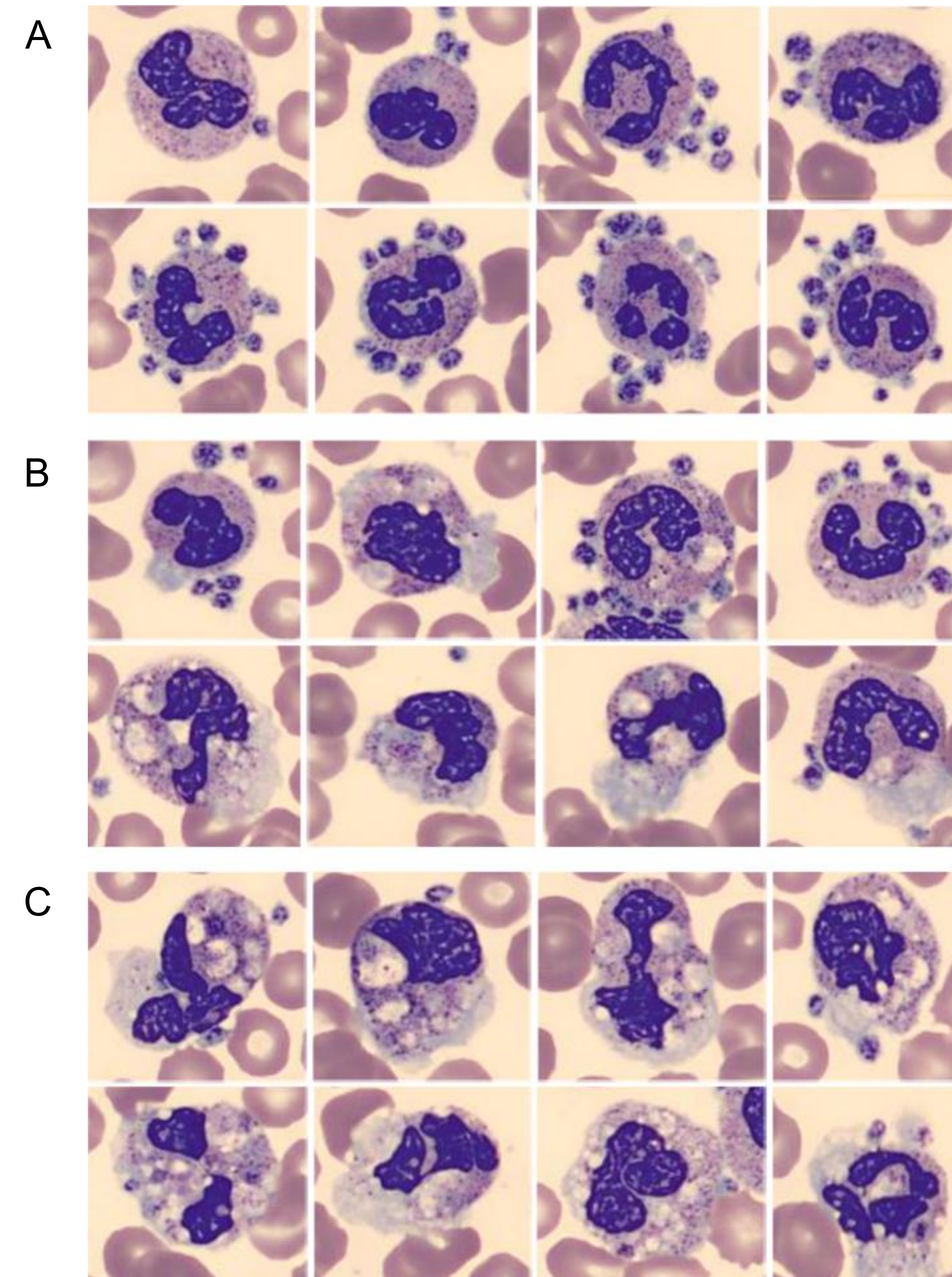
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