



## Hemepath Case 36: 25-Year-Old Female

### HISTORY

A 25-year-old female visits her family physician for an annual check-up. She is in good health and reports no illnesses. Physical examination yields no significant findings. A routine CBC is performed.

### CBC

Hgb (g/L)	N
MCV	N
WBC	N
Plt	Severely low

### DESCRIPTION OF SLIDE

#### Peripheral Blood Smear

Erythrocytes and leukocytes are generally unremarkable, with a mild neutrophilic left shift. No blasts are seen. Platelets are severely clumped (see circles), although the morphology of individual platelets is normal.

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### MORPHOLOGICAL DIAGNOSIS

Spurious thrombocytopenia

### DISCUSSION

This is a case of artefactual (spurious) thrombocytopenia. The patient has a normal quantity of platelets, but the platelets are clumped together. As the automated counter cannot identify clumped platelets as individual platelet cells, it reports a falsely low platelet count. It is therefore important to confirm an abnormal platelet count with a microscopic assessment of the blood film.

Platelet aggregation may be induced by platelet activation during blood collection, or caused by anti-platelet antibodies. These antibodies are occasionally found in normal, healthy patients and may play a role in removing senescent or damaged platelets.

Platelet clumping is commonly observed in the presence of ethylenediaminetetraacetic acid (EDTA): EDTA chelates calcium and alters the platelet membrane, exposing membrane glycoproteins as attachment sites for the antibodies. EDTA tubes are the ones most commonly used for CBCs and peripheral smears. If an EDTA-dependent antibody is considered as a cause of pseudothrombocytopenia, the patient's CBC can be repeated using a heparinized or citrated tube (although these other anticoagulants, including heparin, sodium citrate, and sodium oxalate, can also produce pseudothrombocytopenia). As platelet clumping is not related to abnormal bleeding or clotting, it has no clinical significance.