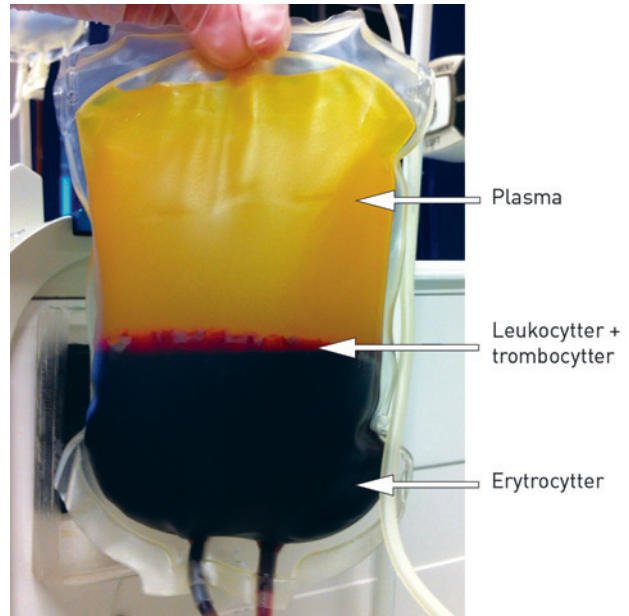
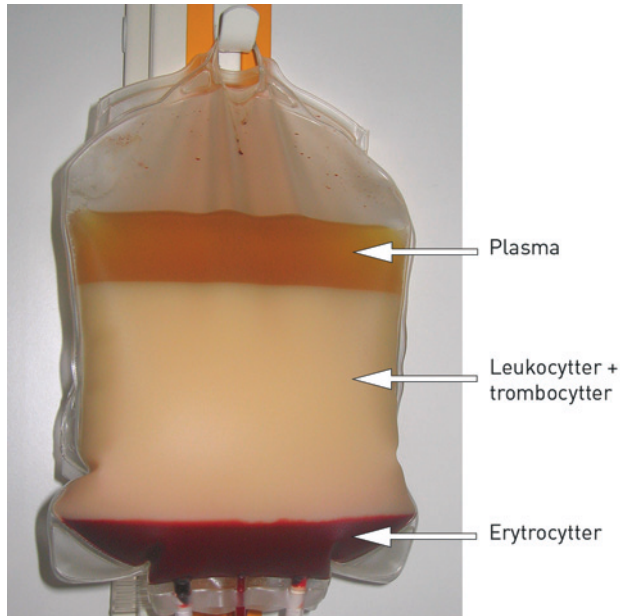


Hyperleukocytosis



A woman in her 40s was admitted acutely to the hospital due to poor general condition, acute onset nausea, vomiting, neck pain and headache. Upon admission, she had significant leukocytosis with a total leukocyte count of $> 600 \cdot 10^9$ cells/L ($3.5\text{--}10.0 \cdot 10^9$ cells/L). Further investigation with blood and bone marrow aspirate smears showed 95% (0%) and 50–70% (1–2%) blasts, respectively. Morphologic and flow cytometric analyses were consistent with acute lymphoblastic leukemia. The symptoms were the same as those of hyperviscosity (1). Two rounds of therapeutic leukapheresis were performed in parallel with tumour lysis prophylaxis and induction therapy. After the first leukapheresis the leukocyte count was halved, and the patient's general condition significantly improved. Leukapheresis product from Day 1 shows an abnormally thick leukocyte layer (the picture on the left). We allowed the bag to sediment and took the picture the following day. For comparison a centrifuged bag of whole blood with a thin leukocyte and platelet layer from a healthy blood donor is shown (the picture on the right). Unfortunately, the patient died a few months after the diagnosis was made.

Prior to leukapheresis, routine haematological laboratory tests are performed and electrolytes are measured. Practice at our Department is that platelet transfusion is requested prior to leukapheresis if the platelet count is $< 30 \cdot 10^9$ /L. During leukapheresis, the patient is connected to a cell separator (apheresis device) via a central venous catheter, whole blood is withdrawn, centrifuged, the leukocyte layer is collected, and

the other blood components are returned to the patient. We usually process blood equivalent to 2–3 times the patient's total blood volume.

Therapeutic leukapheresis is indicated in symptomatic hyperleukocytosis (1). Hyperleukocytosis, defined as a leukocyte count of $> 50\text{--}100 \cdot 10^9$ cells/L (1, 2), is most frequent in newly diagnosed acute myeloid leukaemia (10–20%) and acute lymphoblastic leukaemia (10–30%) and is a potentially life-threatening condition. If left untreated, 20–40% of patients die during the first week. In some studies, leukapheresis with concurrent chemotherapy appears to reduce mortality in the first three weeks compared with chemotherapy alone (2, 3), but the results are uncertain. Leukapheresis appears to help to improve hyperviscosity symptoms and reduce the tumour cell burden. Several hospitals do not have emergency leukapheresis preparedness. This must not delay the start of induction chemotherapy (1, 3).

The patient's family have consented to the publication of the article.

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The author has completed the ICMJE form and reports no conflicts of interest.

Litteratur

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