targeted therapy with RTK inhibitors not only in AIDS-related KS patients,[9] but also in classic drug-resistant multicentric KS disease and particularly in post-transplant subjects in whom KS may behave in a very aggressive fashion. Further molecular studies and clinical trials are warranted to better elucidate the significance of c-kit and PDGFR expression in KS and the therapeutic role of imatinib, as well as other selective inhibitors of tyrosine kinase activity, for the treatment of KS patients.

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Extramedullary haematopoiesis in axillary lymph nodes following neoadjuvant chemotherapy for locally advanced breast cancer—a potential diagnostic pitfall

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Sir: With the assessment of sentinel lymph nodes now established practice within breast cancer management, it is important to be aware of potential diagnostic pitfalls that the reporting pathologist may encounter. We report the occurrence of the rarely encountered process of extramedullary haematopoiesis (EMH) in axillary lymph nodes following neoadjuvant chemotherapy for locally advanced breast cancer (LABC).

A 36-year-old women presented with a 90-mm mass in her left breast, and subsequent biopsy confirmed invasive ductal carcinoma of no special type, grade 3, oestrogen receptor (ER)-positive, progesterone receptor (PR)-positive and HER-2 amplified. Clinically, there were enlarged palpable lymph nodes that were presumed to be involved, but a bone scan and liver ultrasound were negative. As the carcinoma was located superior to the nipple at the 12 o'clock position and due to its large size, primary skin closure was considered too difficult to attempt and surgery was deferred. Subsequently, the patient underwent six cycles of neoadjuvant chemotherapy (three cycles docetaxel, adriamycin, cyclophosphamide followed by three cycles docetaxel) with the haematopoietic growth factor granulocyte macrophage–colony-stimulating factor to minimize myelosuppression. Herceptin treatment was deferred until surgery was completed. Post-treatment imaging showed no detectable disease in the breast. The patient underwent mastectomy and axillary dissection approximately 4 weeks following completion of chemotherapy. Within the mastectomy specimen, there was an ill-defined macroscopic area of scarring, approximately 90 mm in diameter, in the expected position of the tumour. Twelve nodes were identified in the axilla. Blocks taken from the ill-defined area of regressed tumour in the breast showed small scattered groups of residual invasive ductal carcinoma, visible over an area of approximately 30 mm, that retained strong positivity for ER, PR and HER-2 high amplification using chromogenic *in situ* hybridization. Within the axillary lymph nodes, a micrometastatic deposit was present in one of 12 nodes. However, it was also apparent that all of the nodes also contained several large atypical single cells within the sinusoids, which had polylobated

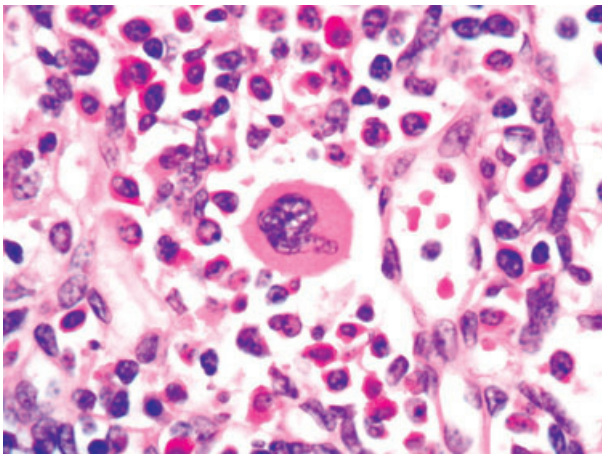

Figure 1. A megakaryocyte with eosinophils and myeloid precursors in a lymph node sinusoid.

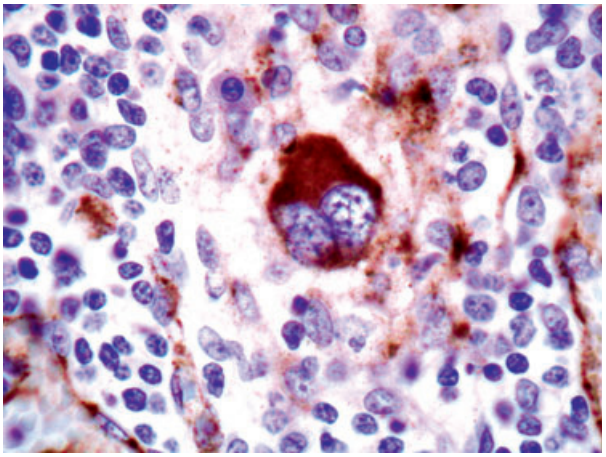

Figure 2. A megakaryocycte staining positively for Factor VIII.

hyperchromatic nuclei and abundant eosinophilic cytoplasm. Some of these cells were associated with increased numbers of eosinophils and myeloid precursors (Figure 1). Immunohistochemistry showed the large multinucleated cells to be negative for cytokeratins Cam5.2 and AE1/3, but with positive staining for factor VIII (Figure 2) and CD31, confirming them to be megakaryocytes, representing lymph nodal extramedullary haematopoiesis.

Neoadjuvant chemotherapy is used in the management of LABC to shrink large inoperable tumours, optimize satisfactory local surgical control and eradicate micrometastases. However, this treatment information may not be immediately known to the pathologist at the time of reporting. This is of course most pertinent to the evaluation of a sentinel node, which is reportedly accurate in neoadjuvant-treated patients with a clinically negative axilla.[1,2] Thus, one should consider EMH in the differential diagnosis of isolated tumour cells to avoid a false-positive diagnosis. This may be more acutely problematic during an intraoperative consultation with cytological touch imprints or frozen section assessment, when examination of the whole node or immunohistochemistry is not available. Megakaryocytes typically stain with factor VIII, CD31 and CD61 (not available in our laboratory). Good communication between surgeon and pathologist is paramount to share all available information. EMH is defined as the occurrence of one or more of the trilineages of haematopoietic cells outside of bone marrow and its occurrence in axillary lymph nodes is very rare, with only two identified reports in the literature of isolated megakaryocytes in sentinel nodes, one of which followed chemotherapy.[3,4] This may therefore represent only the second report of this observation following neoadjuvant chemotherapy for LABC.

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