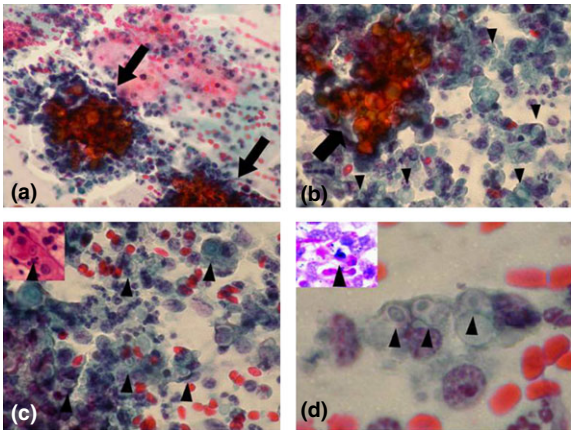

Figure 1. Smears show atrophy with moderate acute inflammation, psammoma body-like (a, b, arrows) calcifications (b–d, arrowheads), and intra- and extra-cytoplasmic laminated inclusions (Papanicolaou ×200, ×33, ×330, ×400); (c, inset) periodic acid–Schiff; (d, inset) von Kossa.

was given symptomatic treatment afterwards with no follow-up.

Microscopic psammoma body calcified structures in cervical smears can be seen in association with benign disorders, including adhesions, benign ovarian tumours, cervical polyps, endometriosis, endosalpingiosis, fallopian tubal cells, intrauterine device, oral contraceptives, pregnancy and sexually transmitted diseases. Malignant disorders associated with psammoma bodies include carcinomas of the cervix, endometrium, ovary, fallopian tube and peritoneum.[1] Benign conditions often have a few associated bland glandular cells versus adherent malignant glandular cells in malignant disorders.[1] Malakoplakia is a granulomatous process that results from impaired phagocytosis of a bacterial infection, particularly *Escherichia coli*. In this condition, in addition to inflammatory cells, such as histiocytes, lymphocytes and plasma cells, characteristic concentrically laminated calcified spherules, Michaelis–Gutmann bodies, which are pathognomonic for malakoplakia, may be observed. They can be stained by periodic acid–Schiff and for calcium by von Kossa staining.[2]

Although malakoplakia is classically described as an inflammatory condition of the genitourinary tract in middle-aged women,[2] it may be associated with a variety of tumours.[3] The typical gynaecological malakoplakia presents with post-menopausal vaginal bleeding. Immunosuppression may be associated with this condition, which has been reported in the literature.[4,5] The patient in our case was not immunosuppressed.

In conclusion, psammomatous-like calcification in uterine malakoplakia may be a diagnostic pitfall for other benign and malignant uterine conditions; the detection of Michaelis–Gutmann bodies helps to confirm malakoplakia.

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B-cell non-Hodgkin lymphoma and pseudo-Gaucher cells in a lymph node fine needle aspiration

DOI:10.1111/cyt.12254

Dear Editor, pseudo-Gaucher cells (PGCs) are benign histiocytes with abundant cytoplasm resembling Gaucher cells. PGCs have a distinct morphological, phenotypical and ultrastructural appearance; they

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are not frequently observed and may occur in the bone marrow, liver and spleen of patients with haematological disease.[1–3] Their presence in lymph nodes has been exceptionally reported to be associated with mycobacterial infection[4] and plasmacytoid non-Hodgkin lymphoma (NHL).[5]

Here, we describe a case of PGCs-rich NHL in fine needle aspiration (FNA) lymph node smears. In this case, PGCs partially overlaid the lymphomatous cells, and application of appropriate ancillary techniques contributed to the diagnosis.

A 64-year-old male had suffered from a nodal, Ann Arbor stage II, marginal zone NHL (MZL) and had achieved complete remission after four cycles of multi-agent chemotherapy. After 9 years, the patient developed a left lateral cervical swelling. A computed tomography scan revealed multiple enlarged cervical, supraclavicular and paravertebral lymph nodes without any organomegaly. An ultrasound-guided FNA of the largest cervical lymph node was performed by a cytopathologist as previously described.[6] The first pass smears were alcohol fixed and air dried, respectively; the latter was Diff-Quik (Bio Optica, Milan, Italy) stained and used for rapid on-site evaluation (ROSE). The cellularity was deemed to be satisfactory, and two additional passes were performed. ROSE showed a cell population of relatively polymorphous, dissociated, lymphoid cells and a second cell population represented by large, isolated cells with abundant cytoplasm containing eosinophilic corpuscles. Considering the patient's clinical history, a recurrence of the former MZL was considered; however, the second cell population might have been an expression of transformation to high-grade NHL or even of a second malignancy that needed to be ascertained. Therefore, a second pass was suspended in phosphate-buffered saline (PBS) and the cells subjected to flow cytometry (FC) using the following fluoresceinated antibodies: CD5, CD19, CD23, FMC7, CD10, kappa, and lambda light chain and a three-colour analysis technique on a Becton Dickinson (San Jose, CA, USA) flow cytometry analyzer scan (FACScan), as previously described.[6] Because of the second large-cell population, a third pass was suspended in buffered formalin to prepare a paraffin-embedded cell block (CB) for immunocytochemical (ICC) evaluation using the following pre-diluted antibodies: Cytokeratin pan (CK-pan), common leukocyte antigen (LCA) and CD68, periodic acid-Schiff (PAS) and iron staining were used for histochemical (HC) analysis.

Both the Diff-Quik and Papanicolaou smears were highly cellular and relatively polymorphous consisting of small- and medium-sized lymphoid cells and occasional plasma cells. These small- and medium-sized cells were isolated or loosely aggregated with irregular nuclear membranes and dispersed chromatin (Figure 1a). The mitotic index was low and on ICC, the cells were LCA positive. The corresponding FC phenotype was CD19+, CD10−, CD5−, CD23− and there was kappa light chain restriction (Figure 1b) This phenotype was similar to the one observed at the time of the initial diagnosis 9 years ago.

Other than the lymphoid cells, a second population of numerous large cells with abundant cytoplasm and a round to oval nucleus, with a small but distinct nucleolus were observed. The cytoplasm was pale and contained eosinophilic dense round corpuscles (Figure 2a). Binucleated cells were also present. At ICC, these cells were CD68 positive (Figure 2b) and LCA and CK-pan negative. PAS and iron staining were also negative. These cells were interpreted as histiocytic type PGCs. Based on cytological and ancillary technique results, a relapse of MZL associated with PGCs was diagnosed. A bone marrow biopsy performed for clinical staging was negative, and any possible inherited Gaucher's disease trait was clinically ruled out by serum leucocyte β-glucosidase negativity. The patient was treated without further diagnostic procedures and after 1 year he is alive without signs of disease.

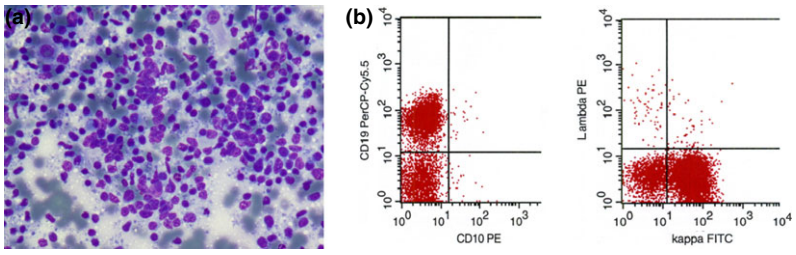

Figure 1. (a) Isolated and pseudo-aggregated small- to medium-sized lymphoid cells with irregular nuclear membranes and dispersed chromatin (Diff Quik, 20×); (b) Flow cytometric analyses: CD19 positivity in upper left quadrant and kappa light-chain restriction in the lower right quadrant.

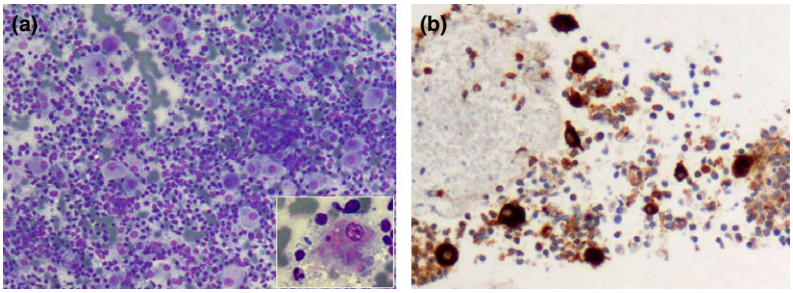

Figure 2. (a) The polymorphous cell population mainly represented by small and large lymphoid cells, plasma cells and numerous large cells with abundant cytoplasm and a round to oval nucleus with a small but distinct nucleolus (Diff-Quik, 20×). The cytoplasm is pale or basophilic and contains eosinophilic dense round corpuscles (inset, Diff Quik, 40×); (b) Pseudo-Gaucher cells showing CD68 positivity (ABC, 20×).

Ancillary techniques are fundamental tools when dealing with NHL on cytological samples. The assessment of clonality and specific FC phenotypes allows the diagnosis and classification of most NHLs.[6] Nonetheless, FC is less effective when large cells and/or non-lymphomatous cells are present. In these cases, conventional ICC is generally more effective, as in the present case in which PGCs were diagnosed by ICC.

The presence of histiocytes in the lymph nodes, including PGCs, is not specific as it may occur in a wide spectrum of pathologies ranging from infections and neoplasms to non-specific reactive processes. In fact, histiocytes may be observed in different conditions with characteristic features such as tingible-body macrophages in reactive non-specific hyperplasia, lymphophagocytosis in Rosai–Dorfman disease, epithelioid and multinucleated giant cells in granulomatous processes, histiocytes with twisted and grooved nuclei in Langerhan's cell histiocytosis and even marked nuclear atypia in malignant histiocytoses. Our case lacked any of the above-reported features. Therefore these entities were ruled out. Instead, the cytological features in our case perfectly fit the PGCs as described in the literature[1,2] and were confirmed by ICC. In conclusion, PGCs may hamper the lymph node cytological diagnosis by obscuring the basic pathology and can lead to possible misdiagnosis. Hence, in the presence of PGCs, a possible association with different pathology has to be considered. Finally appropriate application of ancillary techniques, informed by ROSE, each with its own possibilities and limitations, may contribute to an accurate FNA diagnosis.

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