Signet-Ring Cell Lymphoma

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Figure 1. The lymph node structure was replaced by follicular proliferation of abnormal medium- and large-sized lymphoid cells with round or oval nuclei (A, B). In some places, the cytoplasmic inclusion bodies displaced the nuclei to the periphery of the cells, resulting in a signet-ring appearance (B, C). Both lymphoid cells and signet-ring cells showed positive staining for B-cell marker CD20 (D). No intracytoplasmic or surface staining with κ and λ light chains could be identified (E, F). It has been hypothesized that signet-ring cell appearance is caused by abnormal production/secretion of immunoglobulin products or aberrant membrane recycling with internalization of surface antigen. The latter theory may explain the findings of the present case, in which light chains could not be detected within the cytoplasmic inclusion bodies.
Signet-ring cell lymphoma is a rare morphologic variant of non-Hodgkin’s lymphoma composed of cells with a “signet-ring cell” appearance. It has been described in B-cell lymphomas, most often as a variant of follicular lymphoma, and in T-cell lymphomas.

A 23-year-old man presented with cervical lymphadenopathy. He did not have other lymphadenopathy or organomegaly. Lymph node biopsy was performed. Histologic examination showed follicular proliferation of atypical medium- to large-sized lymphoid cells (Fig. 1A and B). In places, signet-ring cells with obvious intracytoplasmic inclusion bodies were detected (Fig. 1B and C). Immunohistochemical study revealed that both lymphoid cells and signet-ring cells were positive for CD20 (Fig. 1D) and negative for CD45R, κ, and λ light chain (Fig. 1E and F). A diagnosis of follicular lymphoma with signet-ring cells was made.

In addition to nodal disease, signet-ring cell lymphoma may involve extranodal sites such as skin, thyroid, tonsil, breast, bone marrow, central nervous system, stomach, urinary bladder, salivary gland, and orbit. In some cases, it is necessary to distinguish from adenocarcinoma, malignant melanoma and liposarcoma.