Russell Body Gastritis
An Unusual, Tumor-like Lesion of the Gastric Mucosa

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The case of an 80-year-old woman who presented with epigastric symptoms is reported. Upper gastrointestinal endoscopy displayed Candida esophagitis and a localized swelling of the fundic mucosa. Histologic examination of the gastric biopsy showed a distinctive accumulation of numerous uniform plasma cells filled with so-called Russell bodies. On low-power view, the lesion resembled a neoplastic process due to the marked expansion of the lamina propria with distension of fundic glands. However, immunohistochemistry confirmed a polyclonal pattern of the plasma cells. This unusual reactive lesion of the gastric mucosa has only rarely been described and has been termed Russell body gastritis.

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Plasma cells are an integral component of the gastric lamina propria in chronic gastritis, where they are usually admixed with lymphocytes and a variable amount of neutrophils. In 1997, however, Tazawa and Tsutsumi reported a peculiar lesion of the gastric mucosa consisting of a localized accumulation of numerous plasma cells filled with eosinophilic globules, so-called Russell bodies. These authors coined the term Russell body gastritis and favored an associated infection with Helicobacter pylori to be responsible for this unique lesion. However, in the last sentence of their report, Tazawa and Tsutsumi proposed the publication of similar cases in order to clarify the nature and biological significance of Russell body gastritis.

REPORT OF A CASE

An 80-year-old woman was admitted at the neurologic unit because of cerebellar symptoms. She had a history of alcoholic and analgesic abuse and had been treated for subdural hematoma and variable dermatologic disorders in the past. She also complained about epigastric pain and nausea and was therefore referred to a consulting gastroenterologist. An upper gastrointestinal endoscopy was performed, which revealed Candida esophagitis. Furthermore, a circumscribed, irregular mucosal swelling was observed at the back side of the fundus next to the major curvature, measuring up to 3 cm (Figure 1). Multiple biopsies were taken from the esophagus as well as from the gastric lesion.

PATHOLOGIC FINDINGS

The biopsies were routinely stained with hematoxylin-eosin and with periodic acid–Schiff reagent. Immunohistochemistry was performed on the gastric biopsies and included reactions against cytokeratin (clones AE1/AE3; DAKO Corporation, Carpinteria, Calif), plasma cells (clone VS38c; DAKO), k and l immunoglobulin light chains (clones R10–21-F3 and N10/2; DAKO), Ki-67 (clone MIB-1; Dianova, Hamburg, Germany), and Helicobacter pylori (polyclonal; DAKO). The biopsies from the esophagus displayed squamous epithelium infected with fungal hyphae and infiltrated by neutrophil granulocytes, thus confirming the endoscopic diagnosis of Candida esophagitis. The biopsies from the gastric lesion showed a marked expansion of the lamina propria due to an infiltration of monomorphic cells with eosinophilic cytoplasm and eccentric nuclei (Figures 2 and 3). On low-power examination, the lesion resembled a neoplastic process, like a signet-ring cell carcinoma or a malignant lymphoma. However, immunohistochemistry against cytokeratins demonstrated that the infiltrating cells were not of epithelial origin (Figure 4). No lymphoepithelial lesions were observed. Rather, a positive reaction was recorded with the antibody VS38c, which is directed against the p63 protein in human plasma cells. On high-power examination, the typical aspect of “Motts cells” (ie, plasma cells with crystalline or round eosinophilic intracytoplasmic inclusions, so-called Russell bodies) was visible (Figure 3). In contrast, intranuclear inclusions (ie, “Dutchers bodies”) were absent. A polyclonal pattern was recorded by immunohistochemistry against immunoglobulin light chains (Figures 5 and 6). Nuclear atypia or mitoses were absent, and the reaction against Ki-67 disclosed a proliferation index of clearly less than 1% in the infiltrating cells. The diagnosis of a reactive plasmacellular lesion, termed Russell body gastritis, was made. Immunohistochemistry against Helicobacter pylori was negative.

COMMENT

Russell bodies are thought to be an accumulation of condensed immunoglobulins in the cytoplasm probably resulting from a disturbed secretion. The neoplastic cells in plasmacytoma and some malignant lymphomas occasionally contain Russell bodies, but plasma cells with Russell bodies may also be seen in association with chronic
Figure 1. Gastroscopic view of a fundic lesion showing a sharply demarcated mucosal swelling.

Figure 2. Gastric biopsy showing marked expansion of the lamina propria by monomorphous cells with eccentric nuclei (hematoxylin-eosin, original magnification ×100).

Figure 3. High-power view of infiltrating plasma cells with crystalline or round eosinophilic inclusions (hematoxylin-eosin, original magnification ×1000).

Figure 4. Immunohistochemistry with an antibody against cytokeratin (clones AE1/AE3) demonstrating distension of the gastric glands, the non-epithelial nature of the infiltrating cells, and an absence of lymphoepithelial lesions (alkaline phosphatase–anti-alkaline phosphatase [APAAP] technique, original magnification ×100).
inflammation. By this way, some plasma cells with Russell bodies are not an uncommon finding in chronic gastritis.

However, in 1998, Tazawa and Tsutsumi described a very peculiar, localized accumulation of plasma cells with Russell bodies in the gastric mucosa, which they named Russell body gastritis. The morphologic details of their case report match well with the case presented here. Both cases clearly differ from chronic gastritis in several aspects. First, the accumulation of plasma cells seems to be well circumscribed rather than diffuse. This is suggested by the endoscopic findings in the current case and by the histologic findings in the case described previously. Second, the lesions in both cases are characterized by a dense and monomorphous infiltration of plasma cells within the lamina propria. Third, there is a striking expansion of the lamina propria by the infiltrating plasma cells with distension of the gastric glands.

For these reasons, the lesion can be confused with a neoplastic process. On low-power view, the plasma cells with Russell bodies may resemble signet-ring cell carcinoma. On high-power examination, however, the infiltrating cells can easily be identified as plasma cells. With the periodic acid–Schiff reagent reaction, the Russell bodies can be distinguished from the intracytoplasmic mucin inclusions in signet-ring cell carcinoma. Definite exclusion of carcinoma can be obtained by immunohistochemistry. Malignant lymphoma, especially mucosa-associated lymphatic tissue (MALT) lymphoma, is also a serious consideration, but the lack of lymphoepithelial lesions, nuclear atypia, or mitoses favors a reactive nature of the infiltrating cells. Plasmacytoma can occur in the stomach, but immunohistochemistry against immunoglobulin light chains demonstrated a polyclonal pattern. Furthermore, the infiltrating cells showed virtually no proliferation by immunohistochemistry with the MIB-1 antibody, making a malignant tumor quite unlikely.

The reason for the localized accumulation of plasma cells is unclear. In the case reported by Tazawa and Tsutsumi, an associated infection with Helicobacter pylori was assumed to have provoked the lesion, but the association with this infection could have been incidental as well. In the current case, a Helicobacter pylori infection could not be disclosed even with immunohistochemical methods.

We are not aware of any further investigations about this form of gastritis, but knowledge of this peculiar reactive pattern of the gastric mucosa may prevent confusion with neoplastic disorders.

References


Figure 5. Immunohistochemistry with an antibody against κ immunoglobulin light chains (clone R10–21-F3; APAAP technique, original magnification ×250).

Figure 6. Immunohistochemistry with an antibody against λ immunoglobulin light chains (clone N10/2; APAAP technique, original magnification ×250).