Malakoplakia of the colon associated with colonic adenocarcinoma diagnosed in colonic biopsies

F Karasavvidou, SP Potamianos, S Barbanis, E Stathakis, A Psychos, AN Kapsoritakis, G Koukoulis

F Karasavvidou, S Barbanis, E Stathakis, G Koukoulis, Department of Pathology, University Hospital, Larissa 41110, Greece

SP Potamianos, A Psychos, AN Kapsoritakis, Department of Gastroenterology, University Hospital, Larissa 41110, Greece

Correspondence to: Foteini Karasavvidou, Department of Pathology, University Hospital of Larissa, Larissa 41110, Greece. fotkaras@yahoo.gr

Telephone: +30-2410-681794 Fax: +30-2410-670113

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Abstract

Malakoplakia, typically involving the urinary tract, is an uncommon form of chronic inflammation caused by chronic infections and characterized by accumulation of macrophages. It has also been found in many other sites such as the gastrointestinal tract, pancreas, liver, lymph nodes, skin, respiratory tract, adrenal gland, vagina and brain. We present a case of a 64-year-old man referred to our hospital with cachexia and radiologic evidence of metastatic tumor of the liver. Colonoscopy revealed a large malignant - appearing polypoid mass of the ascending colon and multiple distinct polyps throughout the rest of the colon. Biopsies of the ascending colon mass confirmed the diagnosis of adenocarcinoma. Histological examination of two of the other polyps revealed malakoplakia which was characterized by aggregates of granular histiocytes with Michaelis - Gutmann bodies and histochemically confirmed with periodic acid-Schiff and von Kossa stains. This is a rare case diagnosed on endoscopic samples. The majority of reported cases were found in surgical specimens. In addition, the endoscopic appearance of multiple polyps is unusual in malakoplakia.

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Key words: Malakoplakia; Gastrointestinal tract; Colon cancer

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INTRODUCTION

Malakoplakia, typically involving the urinary tract, is an uncommon form of chronic inflammation caused by chronic infections and characterized by accumulation of distinct macrophages^[1,2]. It has also been found in various sites such as the gastrointestinal tract, pancreas, liver, lymph nodes, skin, respiratory tract, adrenal gland, vagina and brain^[3]. We describe a case of a 64-year-old man with end-stage carcinomatosis which originated from the ascending colon and was associated with colonic malakoplakia. The endoscopic appearance of malakoplakia was very unusual, mimicking multiple polyps throughout the large bowel.

CASE REPORT

A 64-year-old man was admitted to our hospital with cachexia, ascites and multiple liver metastases, according to an abdominal CT scan. He reported a three-month history of fatigue, shortness of breath, altered bowel habits, weight loss and progressive abdominal distension. On examination he was pale and cachectic, and had a bulging abdomen with flank and shifting dullness. Blood pressure was 100/65 mmHg and pulse rate 94 beats/min. Hemoglobin was 8.1 g/dL and hematocrit 25%. Blood chemistry revealed cholestasis and 2.6 g/dL albumin and normal CEA levels. Abdominal CT scan revealed widespread hepatic metastases and a large quantity of ascetic fluid. Abdominal paracentesis and ascetic fluid cytology were compatible with peritoneal carcinomatosis. Colonoscopy revealed a large malignant polypoid lesion, almost obstructing the lumen of the ascending colon, as well as multiple (13) distinct polyps throughout the rest of the colon (5 rectal, 5 sigmoid, 3 transverse). The polyps were sessile, soft, ulcerated and hemorrhagic, measuring 5-15 mm in diameter (Figure 1). Two of them were removed in order to exclude a familial polyposis syndrome. The patient received only supportive treatment and subsequently died of liver failure-generalized carcinomatosis two weeks after hospitalization. Biopsies of the ascending colon mass confirmed the diagnosis of adenocarcinoma.

Histological examination of two of the other polyps revealed malakoplakia characterized by aggregates of granular histiocytes (Figure 2A). Several of these histiocytes contained intracytoplasmic Michaelis - Gutmann bodies (Figure 2B), which were confirmed

Figure 1 Endoscopic appearance of distinct polyps of the colon.

histochemically with periodic acid-Schiff and von Kossa stains (Figure 2C).

DISCUSSION

Malakoplakia, derived from the Greek adjective malakos (soft) and plaka (plaque), was first described in 1902 by Michaelis and Gutmann^[4]. It occurs predominantly in the genitourinary tract (about 75% of the reported cases)^[2]. The second most common site is the gastrointestinal tract (11% of the cases), and the majority of these cases involve the rectum and colon^[5,6]. The remaining cases affect the brain, lungs, lymph nodes, adrenals, tonsils, conjunctiva, skin, bone, abdominal wall, liver, pancreas and retroperitoneum^[3]. An increasing number of cases have been correlated with immunosuppression^[7,8].

Definitive diagnosis of the lesion can be made by histopathologic examination. Malakoplakia is characterized by aggregates of histiocytes with abundant eosinophilic cytoplasm known as von Hansemann cells, intermingled with lymphocytes, plasma cells and neutrophils. Finding the well-known Michaelis-Gutmann bodies is diagnostic for malakoplakia. These bodies are phagolysosomes that have become encrusted with calcium and iron salts. They vary in size from 2 μm to 10 μm , have targetoid appearance due to concentric laminations and are stained with periodic acid-Schiff and von Kossa calcium stains. At the ultrastructural level, disintegrated bacteria have been occasionally observed in the Michaelis-Gutmann bodies. The origin of Michaelis - Gutmann bodies is most likely an abnormal response resulting in incompletely digested bacterial fragments and subsequent mineralization^[1,9].

Indeed, malakoplakia is related to chronic bacterial infections, such as *Escherichia coli*, *Proteus mirabilis*, *Staphylococcus aureus*, *Mycobacterium Tuberculosis* and *Shigella boydii*. Fungi such as *Paracoccidioides brasiliensis* and viruses have also been implicated^[1,9,10]. In patients with AIDS, *Rhodococcus equi* has also been reported^[11]. The pathogenesis of malakoplakia remains unknown. Three possible pathogenetic mechanisms have been suggested: an unusual causative organism, an abnormal or altered immune response and an abnormal macrophage response due to defective lysosomal function^[12].

Colonic malakoplakia was first described by Terner and Lattes in 1965^[13] and has been reported to occur in

Figure 2 Aggregates of granular histiocytes in the lamina propria of large bowel mucosa (HE, $\times 200$) (A), Michaelis - Gutmann bodies (HE, $\times 400$) (B) and (Von Kossa, $\times 200$) (C).

conjunction with tumors and non-tumoral conditions^[14-16]. Since 1965 about 95 cases of colonic malakoplakia have been published. Notably, 24 of them had a coexistent colonic adenocarcinoma, similarly to our case^[6]. All of the reported cases were found in surgical specimens, most of them in conjunction with the tumor. Half of the cases occurred as a pericolic mass and only 3 cases as a single nodule or a microscopic focus^[15].

However, our patient is a rare case in which the diagnosis of malakoplakia was made preoperatively on biopsy samples as previously described^[17,18]. The additional biopsies were prompted by the presence of multiple small polyps in addition to the main cancerous one. The coexistence of multiple colonic polyps related to malakoplakia has not been described previously, the previously reported endoscopic appearances have been described as unifocal or nodular lesions and large masses, and the presence of a pericolic mass associated with a fistula has been noted^[6].

Notably, von Hasselman histiocytes can mimic adenocarcinoma cells in frozen sections. A helpful clue for the correct diagnosis is the presence of Michaelis-Gutmann bodies which are not seen in mucin vacuoles.

Our case may serve as a reminder of the clinical significance of malakoplakia coexisting with colonic adenocarcinoma, which increases the risk of over-staging the tumor and over-treating the patient.

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