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Carcinoid Tumor of Ileum and Ischemic Bowel Disease*

*İleumda Karsinoid Tümör ve İskemik Bağırsak Hastalığı**

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Özet: Karsinoid tümör düşük grade'li malign bir neoplazm olup, seyrek olarak mezanter arter dallarında tıkayıcı elastik skleroza yol açarak kolonda iskemi oluşturur. Küçük mezanter arterlerdeki tıkayıcı elastik skleroz, karsinoid kalp hastalığı ve dermal sklerozis karsinoid sendromun fibrosklerotik belirtilerini oluşturmaktadır. Bu olgu sunusunda, 68 yaşında akut batın tanısıyla opere edilen ve ileumda saptanan hemorajik infarkt nedeniyle 1 metrelik ince bağırsak rezeksiyonu yapılan kadın hasta sunulmuştur. Mikroskopik incelemede, ileal karsinoid tümör, yaygın iskemik bağırsak hastalığı ve mezodaki küçük boy arter duvarlarında elastotik dejenerasyon saptandı. Bu bulguları oluşturabilmeleri açısından karsinoid tümör ile diğer damar hastalıkları, ilginç bulunan olgumuzun ve kaynak bilgilerinin ışığında tartışılmıştır.

Anahtar Sözcükler: Karsinoid tümör, karsinoid sendrom, iskemik bağırsak hastalığı

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Summary: *Carcinoid tumor is a low-grade neoplasm. It may rarely cause bowel ischemia by obliterative elastic sclerosis of mesenteric blood vessels. Carcinoid heart disease, dermal sclerosis and obliterative elastic sclerosis are fibrosclerotic manifestations of the carcinoid syndrome. In this case report, we describe a 68-year-old female patient who presented to our hospital with an acute abdomen. During operation, an ileal hemorrhagic infarct was found and an ileal segment one meter in length was resected. On microscopic examination, carsinoid tumor, bowel ischemia and elastotic degeneration of small mesenteric arteries were found. Carcinoid tumor and other vascular diseases that may cause these symptoms are discussed in the light of our interesting case and literature findings.*

Key Words: *Carcinoid tumor, carcinoid syndrome, ischemic bowel disease.*

* *Presented in the XIIth National Congress of Pathology (12-15 October 1996, Ankara).*

Carcinoid tumors are low grade malignant neoplasms. They originate most commonly from gut endocrine cells (1-3). The incidence of these tumors is estimated to be approximately 1.5 cases per 100.000 of the general population. They grow slowly and are often clinically silent for many years. Metastases often occur before the tumor becomes manifest. They frequently metastase to the regional lymph nodes, to the liver, and less commonly to the bone. The metastases are related to tumor size. The incidence of metastases is less than 2 per cent with a carcinoid tumor less than 1 cm in size, but rises to 100 per cent with tumors greater than 2 cm in diameter. The average time from the onset of tumor-related symptoms to diagnosis is a little over 9 years.

Diagnosis is usually delayed until the carcinoid syndrome occurs (1). The carcinoid syndrome occurs in less than 10 per cent of patients with carcinoid tumors. Serotonin, which is one of the substance secreted by carcionid tumors causes the carcinoid syndrome (1-7). The major clinical manifestations of carcinoid syndrome are cutaneous flushing, diarrhea, sweating, wheezing, abdominal pain and symptoms and signs associated with carcinoid heart disease, dermal sclerosis and obliterative elastic sclerosis of the mesenteric blood vessels. Obliterative elastic sclerosis of small mesenteric blood vessels may lead to small bowel gangrene (1, 2, 8).

Herein, we report a case of carcinoid tumor in the ileum which had caused bowel ischemia due to elastotic degeneration of small mesenteric arteries. Our case is interesting and deserves discussion in the light of literature findings, as it is an example of a rare complication and presentation of carcinoid tumors.

Case Report

NA, 2412/96, a 68-year-old female patient came to the General Surgery Department of Osmangazi University Medical School with abdominal pain. Physical examination was remarkable for hypertension and findings compatible with an acute abdomen. Acute abdomen was diagnosed. Her history and physical examination did not suggest carcinoid syndrome.

During operation, a hemorrhagic infarct was observed and an ileal segment one meter in length was resected.

Macroscopic findings

The resection material was gray purple in colour except for the resection margins. The mucosa appeared flat. There was an annular tumor narrowing the bowel lumen. It was 2.2x1.2x1 cm in dimension (Figure 1). Surgical specimens are fixed in 10 percent formalin and stained with hematoxylineosin, Grimelius, Ver-hoeff elastic tissue, Trichrome-Masson stains and also evaluated using Gomoris Silver impregnation technique.

Microscopic findings

Microscopically, tumoral tissue had a nesting pattern. The neoplastic cells had round to oval uniform nuclei. There was no mitosis (Figure 2). Tumoral nests had invaded the serosa (Figure 3). The tumoral tissue was necrotic in some areas. There was a large infarct in the large ileal segment excluding the resection margins. The lamina elastica interna of small mesenteric arteries were showed reduplication, fragmentation and elastotic degeneration (Figure 4).

There were 2 metastatic, 9 reactive lymph nodes in the mesentery. Five of the reactive lymph nodes had suppurative inflammation. Computerized tomographic examination showed no metastases in the liver after operation.

Discussion

The 5 year relative survival rate of small bowel carcinoid invading the serosa or beyond is 5 % (2). A literature survey revealed that cellular atypia and the number of mitotic figures were correlated with patient outcome, but tumor necrosis was not (9, 10). Although the neoplastic cells were uniform and the tumor did not show marked mitotic activity, our case still fulfilled poor prognostic criteria because the tumor dimension was more than 2 cm and presentation was with serosal invasion and lymph node metastases. Our case had resulted in ischemic ileal necrosis secondary to carcinoid syndrome or other obliterative vascular diseases. Arterial and venous factors may cause bowel ischemia. Arterial reasons of ischemia include atherosclerosis, thrombosis, embolism, vasculitis, thromboangiitis obliterans, systemic hypertension, spasm, radiation, carcinoid tumor and mechanic factors like volvulus involving vascular pedicules. One or more etiological factor may operate at the same time. There is segmental involvement generally. Decrease of blood flow may cause changes varying from a small degree of mucosal degeneration to a large infarct. Histopathologic findings are related to the type, duration and severity of diseases involved (8). Among the causes of arterial ischemia, atherosclerosis causes intimal thickness, and fibrous plaque formation. Obliterative endarteritis of submucosal vessels, thickening of vessel walls and sclerosis are seen in radiation damage. Cocaine causes arterial spasm without obliterative changes, resulting in acute

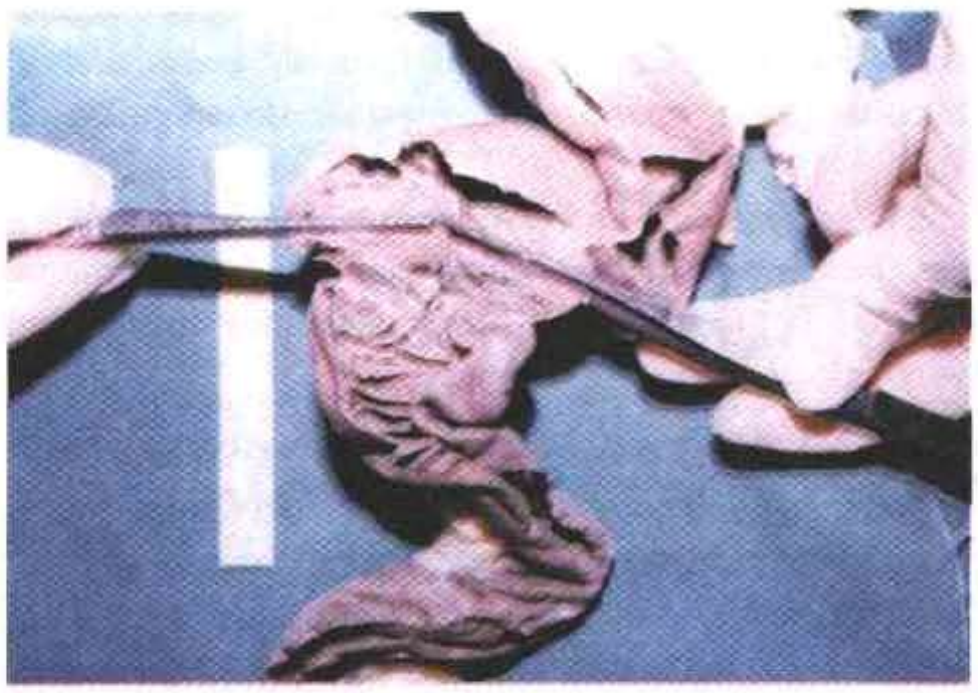

Figure 1. Annular shaped tumoral tissue in necrotic bowel lumen.

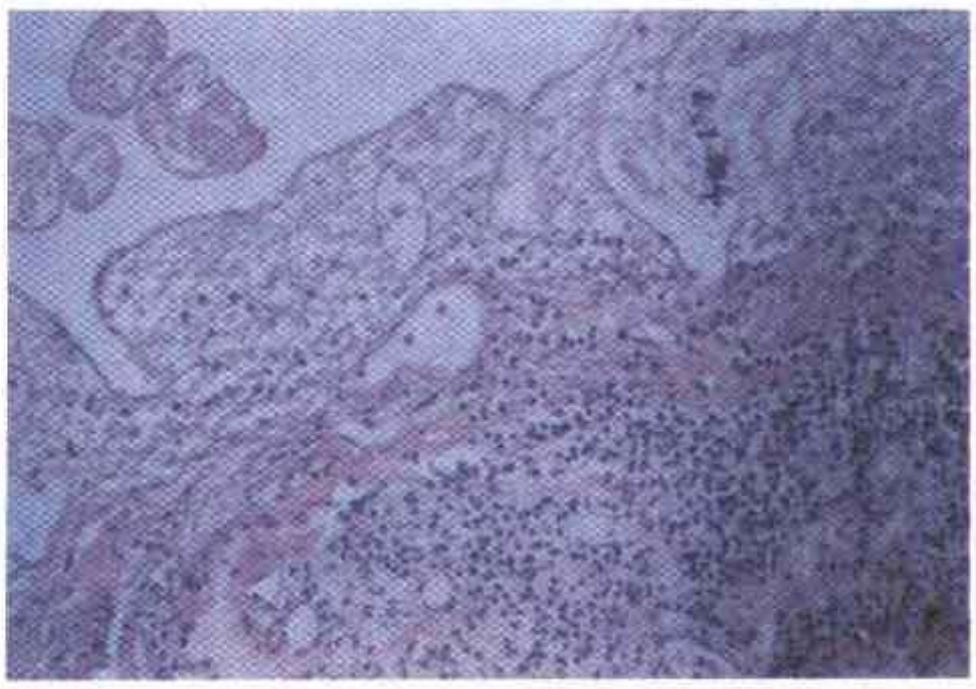

Figure 2. Ischemic necrosis of ileal mucosa and carsinoid tumor

(H + E x 200

Figure 4. Reduplication and fragmentation of internal elastic lamina (Verhoeff elastic tissue stain x 80).

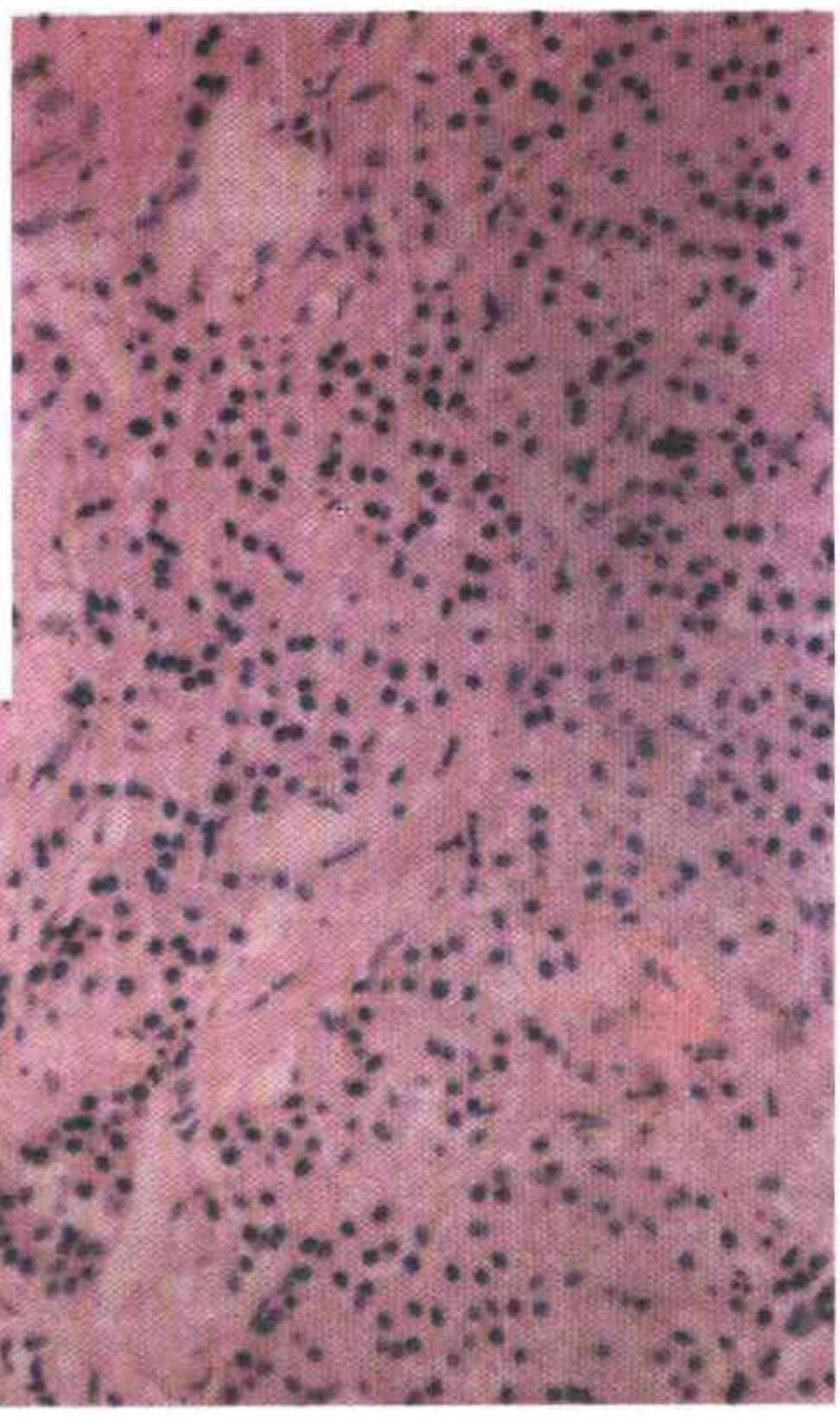

Figure 3. Tumoral invasion of tunica muscularis. (H + E x 400).

bowel ischemia. Periarteritis nodosa causes segmental degeneration of vessel walls, intimal fibrinoid necrosis, transmural inflammation which extends beyond perivascular tissue (8). Carcinoid syndrome causes obliterative elastic sclerosis of mesenteric blood vessels (2). Reduplication and fragmentation of the internal elastic laminae of small mesenteric arteries were remarkable in our case; these latter findings can be also seen in senile patients, particularly in the setting of hypertensive arteriosclerosis leading to obliteration of a degenerated vessel lumen, thereby causing bowel ischemia (11-13). Serotonin can play a role in hypertension and atherosclerosis by stimulating smooth muscle replication (14).

We therefore conclude that the small bowel ischemia described in this case report may have been caused either by the carcinoid syndrome or by senile and/or hypertensive arteriosclerosis. Elastotic degeneration of small mesenteric arteries in our case suggested carcinoid syndrome as the major culprit. Microscopically, the lack of significant congestion and hemorrhage allowed us to eliminate bowel ischemia caused by venous occlusion.

Our case is an interesting example of a very rare presentation and complication of carcinoid tumor. Bowel ischemia due to vascular changes probably related to carcinoid syndrome. Carcinoid tumor and syndrome should be remembered in the differential diagnosis of small bowel ischemia.

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