



## Case Report

# Occlusive stenosis - atypical presentation of right colon cancer

Petrișor Banu<sup>1,2</sup>, Vlad D. Constantin<sup>1,2</sup>, Ioana Păunică<sup>2</sup>, Cristian Bălălău<sup>1,2</sup>

<sup>1</sup>St. Pantelimon Emergency Hospital, Department of General Surgery, Bucharest, Romania

<sup>2</sup>Carol Davila University of Medicine and Pharmacy, Faculty of General Medicine, Bucharest, Romania

### Abstract

Colorectal cancers are one of the most frequent malignancies worldwide. Significant differences are described in relation to the location of tumors within the colon. Thus, between right and left colon cancer there are epidemiological, clinical, genetic, evolutionary and prognostic differences.

Considering these premises, right and left colon cancers can be seen as distinct pathological entities. In right colon cancer the initial phases are often asymptomatic and the presence of symptoms is in relation to advanced phases and complications.

We report the case of a 64-year-old man with no significant medical history who was admitted and operated as an emergency for stenotic and perforated tumor of the right colon. Operative exploration revealed distended small bowel loops and caecum up to the ascending colon where a stenosing tumor is found. The tumor extends to a small bowel loop and also exhibit a perforation. Right hemicolectomy was performed, with favorable postoperative evolution and discharge on 7th day.

### Keywords

: right colon cancer, stenosing tumor, bowel obstruction

### Highlights

- ✓ Literature data suggest that the right colon tumors appear to be different from those of the left colon, both in the mechanism of appearance, histopathology or clinical expression as well as prognostic.
- ✓ A long asymptomatic evolution makes the diagnosis to be established in advanced stages that can be clinically expressed through atypical manifestations.

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## Introduction

Colorectal cancer is currently among the top three malignancies globally. In women, it is second in frequency, and in men it is ranked third.

Although the incidence is higher in western countries compared to less developed countries, overall mortality is higher for the latter ones - 52% of total global colorectal cancer deaths (1, 2).

From the perspective of tumor localization for right and left colon cancer differences are described in terms of clinical presentation and microbiome, molecular characteristics and prognosis.

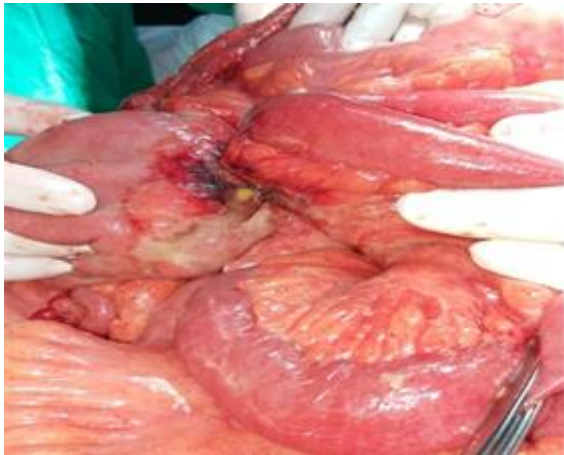
A long asymptomatic evolution for right colon cancers makes their clinical expression to be correlated with advanced stages and sometimes with atypical manifestations.

## Case report

A 64-year-old man with no significant medical history was admitted for pain in the flank and the right iliac fossa with a sudden onset and accompanied by bloating, nausea and vomiting.

Physical examination revealed a distended abdomen with tympanic sounds on percussion and tenderness in the flank and the right iliac fossa.

Plain upright abdominal radiography revealed air-fluid levels with distended loops of the small bowel. Laboratory evaluation revealed leukocytosis – 13000/mm<sup>3</sup>. Celiotomy was decided for bowel obstruction.



**Figure 1.** Stenotic tumor of the ascending colon with perforation and invasion of a small bowel loop

Operative exploration revealed distended small bowel loops and caecum up to the ascending colon where a stenosing tumor is found. The tumor extends to a small bowel loop and also exhibit a perforation (Figure 1). Right hemicolectomy is decided with the resection of the small bowel loop in bloc (Figure 2). Digestive continuity is restored by side-to-side anastomoses.

Postoperative evolution was uneventful with discharge on 7th day (Figure 3).



**Figure 2.** Right colon and small bowel loop resected en bloc



**Figure 3.** Digestive anastomoses after en bloc resection

## Discussion

For colorectal cancer, there are significant differences between the colon located on the right side of the colon and the one on the left. These differences are defined by several aspects: epidemiology, clinical presentation, morphology and histology, molecular characteristics and prognostics.

All these aspects are suggesting that carcinomas of the right and left colon should be considered as different tumour entities (3).

Worldwide, 1,23 million cases of colon cancers are detected each year placing this cancer among the top three most commonly diagnosed cancers. In men, is the third as the frequency, while in women is in second place, but rates are higher in males than in females.

Globally, there are significant geographic differences in its incidence. The highest incidence rates are in countries with a high socio-economic level such as United States of America and Western European countries, and the lowest rates are found in Africa and South-Central Asia (4).

Relative to age, the proportion of right colon cancers has two incidence peaks, one in young patients, less than 40 years (33%), and one in elderly patients, over 80 years, in which the proportion reaches 43%. At the middle ages - 40-59 years the proportion of right colon cancers remains low, under one-third. In older patients the proportion of right colon cancers relative to the left colon cancer increases, but this is not attributable to a true increase in the incidence of right colon cancer, but rather to a decrease in the incidence of left colon cancer at more advanced ages. This increase in the proportion of right sided cancers compared to left sided cancers in older patients, with direct consequences on mortality by two cancers, emerged on the one hand from the screening method used - flexible sigmoidoscopy or colonoscopy, and on the other hand due to higher miss rates for right-sided cancers.

These data support that the benefits of screening for the two locations of colon cancers are different resulting in a significant decreasing in mortality for left-sided CRC mortality (by 70%), but no effect on right-sided CRC mortality (5).

Preventive effect from screening endoscopy is objectified by the results of epidemiological studies that have shown a decline in left-sided cancers incidences (6, 7).

Comparing the proportion of colon cancers as gender group one can see a significant increase in male patients in male patients in 70-79 years age group (30%) while in women the proportion significantly increases between 60 and 69 years (39%) (8).

There is a higher risk for women to develop right-sided colon cancer than men, this risk arising from multiple factors such as genetic, hormonal, dietary habits and socio-cultural environments. Right-sided colon cancer is at advanced stage at diagnosis resulting in a higher rate of mortality in older women comparing with men (9).

Hormonal profile changes with age correlates with changes in the incidence of colon cancer in women. In the premenopausal period, elevated estrogen levels are a

protective factor while reducing circulating estrogen with menopause induces a higher risk of developing colon cancer.

Estrogens have a protective role in the development of colon cancer due to their anti-inflammatory effect on the tumor microenvironment. The different distribution of estrogen receptors for the right and left colon results in a significant increase in the incidence of colon cancer with the aging of women (10).

Hormone replacement therapy in postmenopausal women significantly reduces the risk of developing neoplasia, with 40%, but have a negative effect on tumors already developed (11, 12).

On the endogenous estrogen background dietary factors have a different impact on the risk of colon cancer. High phytoestrogens intake interferes with estrogenic metabolism causing changes in the colonic mucosa such as increasing in ER- $\alpha$  expression, decreasing apoptosis and inducing inflammation (13).

High risk of right-sided colon cancer is associated with increased intake of carbohydrates, polyunsaturated fat, cholesterol, sucrose, and lactose, whilst consumption of soy products is associated with a 21% reduction in colorectal cancer risk in women (14-16).

Socioeconomic status and educational level are correlated with the risk of colonic cancer by a several factors related to the lifestyle: diet, practicing physical exercise, alcohol consumption, access to health care services etc. This cumulation of factors influences both incidence and the tumor location within the colon.

For people in low socioeconomic status there is a significantly higher incidence of colorectal cancer overall, but the lower life standard does not have a significant statistical effect on the incidence of colon cancer particularly. In this category there is a predominance of people with a lower education (less than 12 years of schooling) such as blacks and Hispanics.

Proximal cancers occur with higher frequency in people with postgraduate education than in those with <12 years of education - 49.6% vs. 46.2% (17).

There are three different mechanisms by which a colon cancer can occur: chromosomal instability, CpG, and methylsatellite phenotype, and microsatellite instability.

Chromosomal instability tumors are characterized by the loss of heterozygosity and aneuploidy as a consequence of mutations in the adenomatous polyposis coli resulting in activation of oncogene KRAS and the inactivation of the tumor suppressor gene, TP53. This occurs more often in left-sided colon cancer and is associated with 60%-70% of colorectal cancer (18).

Hypermethylation of certain tumor suppressor genes is the basis of the CpG island methylator phenotype as the path of development of colorectal cancer, while microsatellite instability is characterized by DNA mismatch repair resulting from inactivation of genetic alterations (19).

There are clear differences in clinical outcomes, response to therapies, prognosis and patient survival depending on the location of colon cancers, with obviously worse results for right colon cancer.

The four molecular subtypes of cancers have a differential distribution regarding anatomic regions of the colon.

These disparities result from differences in molecular biology for the two localizations of colon cancers.

For right-sided colon cancers there are higher rates of microsatellite instability and increased mutational burden compared to left-sided colon. Molecular alterations show a gradual distribution from the right colon to the rectum.

Tumors with mismatch repair deficient represent approximately 25% of the right colon tumors and 7% of the left colon (20).

Advanced colonic cancers are most often flat in the proximal colon and exhibit a polyploid appearance in distal colon cancers. There is also a different pattern of metastatic spread and a higher percentage of poorly differentiated tumors for right colon.

Symptomatology of colon cancer is generally related to advanced disease, but early stages also show a symptom clusters that, correlated, can suggest to the clinician indications of the presence of the disease. Symptoms are also differentiated by the location of cancer, the evolutionary stage or its complications that may occur.

Right colon cancer generally has a longer asymptomatic evolution compared to left colon. Anemic syndrome through chronic blood loss is the common clinical presentation of right colon cancer, while advanced left colon cancer is complicated more often by occlusion.

## Conclusions

Data from the literature suggests that the right colon tumors appear to be different from those of the left colon, both in the mechanism of appearance, histopathology or clinical expression as well as prognostic.

A long asymptomatic evolution makes the diagnosis to be established in advanced stages that can be clinically expressed through atypical manifestations.

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