



Case report

A rare case of a trifocal synchronous colon cancer in a 65-year old patient

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ABSTRACT

Introduction: Colorectal cancer is one of the most common type of cancers worldwide. Simultaneous occurrence of at least two tumours in a single patient within 6 months is defined as synchronous colorectal carcinoma (SCC). Within all large intestine tumors, the occurrence of SCC is approximately 3.5%. Patients with more than two tumours account for 1.8% to 16.7% of all SCC cases.

Aim: We present a case of a 65-year-old female patient with triple synchronous colorectal cancer.

Case study: 65-year-old female patient reporting increasing fatigue and shortness of breath, lasting for 6 months, underwent preoperative colonoscopy and computed tomography (CT) scan. Both examinations indicated double malignant lesions in separate parts of the transverse colon. During the subtotal colectomy a third lesion has been found.

Results and discussion: The histopathology results confirmed three adenocarcinoma type tumours (two of grade 3 and one grade 2). Our patient does not suffer from any conditions that increase the probability of SCC. In her family history there are no known ancestors suffering from colon cancers or multiple primary malignant tumor. The patient does not suffer from ulcerative colitis or familial adenomatous polyposis.

Conclusions: The presented clinical case proves that a comprehensive pre-surgical recognition of SCC is not always possible. If a full colonoscopy is impossible, one should consider carrying out a second colonoscopy 3 months after a surgery, particularly in case of patients whose CT results are ambiguous. During a surgery, the entire length of the bowel should be palpably checked for a presence of additional tumours.

1. INTRODUCTION

The large intestine is one of the most common locations of multiple primary malignant tumours (MPMT). MPMTs have been first described by Billroth in the second half of the 19th century.¹ According to the criteria of Warren and Gates, MPMTs are: malignant tumours, which differ histologically and are not metastases.²

An example of MPMT are multifocal large intestine tumours. One of the first researchers to describe those lesions was Long,³ who has identified the following characteristics of MPMT for large intestine: (1) clearly isolated neoplastic foci, separated by an intact intestine wall, (2) presence of a transient zone of atypical cells and an abnormal glands that separate a tumour from a regular mucous membrane, (3) lack of evidence of the tumour being a metastasis or a submucosal spread of the existing cancer.

Presence of concurrent neoplastic lesions extending from the mucosa of the large intestine is also described as a synchronous colorectal cancer (SCC). Next lesion occurring after a certain period of time is called a metachronous colorectal cancer.⁴ Chin et al. defined a synchronous colorectal cancer as a primary lesion present in two or more locations, and found concurrently or within 6 months.⁵ A lesion found after a longer period of time is specified as a metachronic.

Within all large intestine tumors, the occurrence of SCC is approximately 3.5%. However, the actual number is probably higher since not every case is identified.⁶ The incidence rate among males is 1.8 higher compared to females, and the average age of afflicted patients being seen by a physician are in the first half of the seventh decade of life.⁶ The incidence rate increases in cases of patients with a history of familial adenomatous polyposis, hereditary nonpolyposis colorectal cancer or ulcerative colitis, over 75 years of age.^{7,8} It is also higher in cases of patients suffer among other things: hypertension, cirrhosis and consuming excessive amounts of alcohol.^{5,8} Common locations of SCC include sigmoid colon or rectum, and multiple lesions are usually located within the same part of the large intestine.⁹

Particularly frequent in case of SCC, and characteristic for all large intestine tumours, is microsatellite instability (MSI). Additionally to MSI research, observations for p53 mutation, Kirsten RA^t Sarcoma virus (KRAS) gene and glutathione S-transferase (GST) are also conducted. Compared to single tumours, SCC more often include a BRAF gene mutation, and a greater percentage of them are MSI-high tumours. In individual pairs of tumours in patients we may observe similar epigenetic and epigenomic lesions, which indicate the presence of a field effect.¹⁰

2. AIM

The purpose of this publication is to present a case of a 65-year-old female patient with triple synchronous colorectal cancer.

3. CASE STUDY

The 65-years-old patient was admitted to the Internal Medicine Department due to anaemia on October 29, 2018. For 6 months, she had been suffering from increasing weakness, shortness of breath, increased heart rate and abdominal pain with constipation which also occurred during hospitalisation. The patient weight was 85 kg, her height was 1.68 m and her BMI was 30.12 (overweight, 1st obesity degree). The patient was being treated with L-thyroxine 100 mg due to hypothyroidism. The patient has been smoking cigarettes in the amount of 5 pack-years. Moreover, in 2013, she underwent a uterine prolapse surgery. The patient has family history of mother having uterine and breast cancer and father having lung cancer.

During admission, the patient was pale, sweaty, and had an increased heart rate. Per rectum examination has shown a presence of 2nd degree of prolapses (Banov's classification) haemorrhoids with overgrown anodermal folds.

During laboratory tests, faecal occult blood, as well as lowered level of haemoglobin (7.4 g/dL) and erythrocytes ($3.8 \times 10^6/\text{mL}$) were found, while the CEA level was within normal range (1.94 ng/mL). The patient received units of packed red blood cells.

A colonoscopy was carried out, which shown 2 tumour-like lesions. The 1st one was located near the splenic flexure and covered $\frac{3}{4}$ of the bowel circumference. Meanwhile, the 2nd one was located in the vicinity of hepatic flexure and was narrowing the intestinal lumen along the entire perimeter, thus preventing further passage of the instrument and exposure of the proximal part of the large intestine. The sigmoid colon and rectum were described as having no lesions. The histopathological examination shown fragments of hyperplastic polyps and neoplastic foci (adenocarcinoma).

The abdomen CT exposed bifocal large intestine lesion with an infiltration of the adjacent adipose tissue at the level of the transverse colon. The patient was given 3 further packed red blood cell units, and iron infusion was administered parenterally, followed by oral iron supplementation. On November 22, 2018, the patient underwent a surgery.

During the surgery, central incision was made and the peritoneal cavity was opened. A 4 cm diameter tumour was found in the caecum, an 8 cm diameter tumour was found in the transverse colon with an infiltration in the greater omentum, and a concentric tumour of 4 cm diameter was found in the descending colon. The locations of the tumours was slightly different than estimated during colonoscopy. Due to trifocal tumour, a subtotal pancolectomy was performed. The right, central and left colon vessels were tied off and cut; the descending colon at the border with the sigmoid colon was cut off, as well as 10 cm of ileum before the caecum. The sides of the ileum and the sigmoid colon were anastomosed using a linear stapler. The ends were closed by hand (two layers).

4. RESULTS

The histopathology results confirmed 3 adenocarcinoma type tumours. Within the scope of assessment of the histological malignant transformation, 2 of them were G3 and 1 was G2 (Figure).

5. DISCUSSION

Our patient does have few conditions that increase the probability of SCC. In her family history there are no known ancestors suffering from colon cancers or MPMT. The patient does not suffer from ulcerative colitis or familial adenomatous polyposis. On average SCC are also more common in older (70+) male patients, who consume excessive amounts of alcohol. That is why the discovery of multiple tumours during surgery was particularly surprising.

The incidence rate of synchronous tumours is nearly doubled in case of patients with genetic predispositions. Therefore, we should consider whether the patient does not have genetic predisposition to tumours. There are three paths of genomic instability that lead to development of a colon cancer: MSI, chromosomal instability and CpG islands methylator phenotype. Tumours with MSI constitute approximately 15% of all cases of colon cancer.¹¹ MSI is a characteristic feature of the Lynch syndrome and occurs in case of over 95% of such patients.¹² Due to non-fulfilment of the Amsterdam Criteria II by the patient, this has been excluded. Lack of additional symptoms and bowel polyposis also excludes other genetic syndromes that predispose to colon cancer (Bloom Syndrome, Peutz-Jeghers Syndrome).

SCC are relatively rare, and triple SCCs are especially rare. The risk of metastases in case of SCC is higher compared to single lesions. However, 5-year mortality of such patients is comparable to patients with single bowel tumours.¹³

The colonoscopy allowed the diagnosis of 2 tumours; however, it was incomplete due to the bowel narrowing, which prevented the passage of the instrument. The patient was also examined using CT, however, the sensitivity of this examination in case of N0 large intestine tumours is specified at the level of 73%–77%.^{14,15} We did not detect the 3rd lesion before the surgery. Diagnostic difficulties require close collaboration between the clinician and the pathologist at each stage of cancer diagnosis.¹⁶

In the described case, the 3rd tumour was diagnosed during surgery unexpectedly. That is why, as it is often mentioned in the literature, the entire bowel should be examined during surgery. Furthermore, the authors emphasise that in case of failure to carry out a full colonoscopy examination before the surgery itself, it must be performed within 3 months after the procedure.^{17,18} An endoscopic examination during a surgery may be an alternative solution. In a research carried out by Kim and Park, among 51 intrasurgical colonoscopy examinations carried out in a group of 316 patients with large intestine tumour who were subject to resection, synchronous lesions were diagnosed in 19 patients (37.2%).¹⁹



Figure. Two out of three colorectal tumors – postoperative material.

In case of SCC, the selection of the surgical technique also seems to be important. Retrospectively, a cohort study published by van Leersum et al. shown that patients with SCC are subject to laparoscopic procedures less frequently compared to patients with a single tumour.²⁰ Therefore, the classic resection is the most frequently chosen method but should be adapted to the location of the tumour, the depth of its infiltration in the wall of the colon and the general state of the patient. However, surgeons have different opinions as to the extent of the procedure. Some authors suggest a total or a subtotal pancolectomy if those lesions are located in distant sections.²¹ Others prefer local resections in order to maintain normal functioning of the colon.²² In our case, we carried out a subtotal pancolectomy with side-to-side ileosigmoid anastomosis. Standardization of the surgical approach would require further studies. In case of a triple synchronous tumour, an expansive resection seems to be the right choice. In case of a failure to detect other synchronous lesions, this will allow to protect the patient against another surgery and is a preventive action against metachronous lesions.

6. CONCLUSIONS

- (1) The presented clinical case proves that a comprehensive pre-surgical recognition of SCC is not always possible.
- (2) Despite the fact that synchronous colon tumours are rare, one must take into account a possibility of an occurrence of another neoplastic lesion.
- (3) During a surgery, one should palpably check the entire length of the bowel for a presence of additional tumours.
- (4) In case of laparoscopic procedures, exclusion of a presence of additional neoplastic foci may be less efficient.

Conflict of interest

None declared.

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