Collision tumor of recto-sigmoidian junction – case presentation

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Abstract
Collision tumors of the colon are rare. A 64-year-old man was referred on Emergency County Hospital, Craiova, Romania for the evaluation of intestinal obstruction. Colonoscopy demonstrates the presence of about 9/5 cm sized mass in the rectosigmoid junction. After surgical resection, the rectosigmoid lesion was histopathologically composed of two distinct lesions: mucoid adenocarcinoma in the superficial layer and poorly differentiated neuroendocrine carcinoma in the deeper layer. A rectosigmoid tumor showed two distinct tumors with no admixture or transposition of two neoplastic components. A lymph node metastatic deposit contained both tumors. Immunohistochemical stainings were consistent with mucinous adenocarcinoma and neuroendocrine carcinoma of the two neoplasms. We report this case of colonic collision tumor (mucoid adenocarcinoma and neuroendocrine carcinoma) and review of the literature.

Keywords: collision tumor, mucoid adenocarcinoma, neuroendocrine carcinoma.

Introduction
Collision tumors are extremely rare and raise interesting issues of histogenesis. In this article, we present a case of collision tumor’s location at the recto-sigmoid junction about a mucinous adenocarcinoma G3 tangent neuroendocrine carcinoma tumor and review of the literature on this problem.

Gastrointestinal tract carcinomas are occasionally accompanied by neuroendocrine tumors. These lesions were divided into four categories [1–5]: composite tumors, collision tumors, mixed tumors, amphicrine tumors. Collision tumor is a phenomenon characterized by coexistence of two independent tumors and completely distinct at the same site. In different organs of the body have been documented various collision tumors.

Colon adenocarcinoma is the most common entity developed in the colon. Collision tumors developed in the colon are very rare. Previously documented cases of collision tumor of the colon include the presence of adenocarcinomas with carcinoid tumors [6], transitional cell carcinoma [7], ovarian granulosa cell tumors [8] or presence of colic and carcinoid adenomatosis [9], adenocarcinoma of the colon and non-Hodgkin lymphoma [10–14] and colon adenocarcinoma and peritoneal metastases of hepatoid variant of yolk sac tumor [15]. In our case, we present a collision tumor of the recto-sigmoid region consisting of two-independent components: mucinous adenocarcinoma G3 developed in the superficial layers and neuroendocrine carcinoma developed in the deeper layers.

Patient, Methods and Results
The 64-year-old male patient was admitted in Second Surgical Clinic, Emergency County Hospital, Craiova, Romania, with a diagnosis of intestinal obstruction. Patient was presented in emergency service for flatulence, abdominal diffuse pain, transit stop for gas and feces for about four days. The patient’s medical history included hypertension, which had been diagnosed six years earlier. At the physical examination, the patient was found to be dehydrated, the abdomen was distended and tenderness was present.

Abdominal computed tomography (CT) revealed a large soft-tissue mass that narrows the sigmoid colon lumen and shows circumferential thickening of the sigmoid colon; tumors developed in cranio-caudal direction for a distance of 9.8 cm. Multiple hypopattenuating lesions of varying sizes (0.5–1.5 cm) were seen in both of the left and right lobes of the liver, some with indistinct margins. Portal vein was of 12 mm diameter, gallbladder

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without gallstones, right renal cortical cysts, and pancreas and spleen normal aspects.

His laboratory findings at admission were as follows: hemoglobin 13 g/dL, hematocrit 36%, white blood cells count 6500/μL, platelets count 28.9×10⁴/μL, total bilirubin 0.63 mg/dL, creatinine 1.12 mg/dL, aspartate aminotransferase 22 IU/L, alanine aminotransferase 16 IU/L, glucose 94.9 mg/dL, urea nitrogen 44.8 mg/dL.

Colonoscopy demonstrated tumors of the recto-sigmoid junction at 15 cm from the anal verge.

A chest X-ray was normal. Plain radiography of the abdomen demonstrated multiple air fluid levels in the left flank and left iliac fossa.

On opening the abdomen we found in the peritoneal cavity hemorrhagic fluid, which was collected for cytological examination and the anterior abdominal wall mass was located in the region of the peritoneum suprapubic about 1.5 cm in diameter. Surgical examination of the abdominal cavity showed the bulky pelvic tumor originating from the recto-sigmoid junction, about 7 cm in diameter. The surface of the mass was hard, unregulated, extending into the mesentery ileal loop without fixation of the tumor to the bladder and iliac vessels. We found multiple lymph nodes in the mesentery and mesosigmoid.

A rectosigmoidectomy was performed with a colorectal anastomosis side-to-end, parietal peritoneal excision of the tumor, mesenteric tumor excision. A histopathological examination of the resected specimen showed collision tumor.

According to TNM classification, this is a stage IV (T3N2M1) colon cancer. The patient was discharged after 20 days without complications and delivered adjuvant chemotherapy.

Gross examination of the resected colon showed an encircling tumor developed of the recto-sigmoidian junction, which occupied most of colorectal junction and measured 11/7 cm.

Paraffin-embedded blocks and section were prepared and sections were prepared in the conventional manner and stained with Hematoxylin–Eosin (HE).

Microscopic examination of HE-stained slides showed the presence of two components separated by connective band: poorly differentiated mucinous adenocarcinoma in the superficial layer and in the deep layer neuroendocrine carcinoma tumors.

The component in the superficial layer was poorly differentiated mucinous adenocarcinoma, composed of closely packed glands lined by cuboidal epithelium with oval or round vesicular nuclei (Figure 1).

In the deep layer, but completely separated of the adenocarcinoma area by a conjunctive band, there was another component (Figure 1). It showed small cells, arranged in trabeculae, small islands and acini with granulate cytoplasm and uniform nuclei. These cells were positive for chromogranin (Figure 2) and synaptophysin (Figure 3) and diagnosis was of neuroendocrine carcinoma. Immunohistochemistry for MUC2 was positive in the adenocarcinoma area (Figure 4).

This arrangement was diagnosed as a collision tumor of the recto-sigmoidian junction, composed of a mucinous adenocarcinoma in the superficial layer and neuroendocrine carcinoma in the deep layer.

Both components invaded the colonic wall, with serosal involvement and invasion of the mesentery; there was no bladder tumoral infiltration. Lymphatic permeation was present, but no venous invasion was present. Seven regional lymph nodes presented adenocarcinoma (Figure 5) and neuroendocrine carcinoma (Figures 6 and 7) metastases.

Immunohistochemical staining was performed for lymph nodes metastasis: chromogranin and synaptophysin the positive in metastatic lymph from neuroendocrine carcinoma tumor and MUC2 staining was positive in metastatic mucinous adenocarcinoma starting point.

Discussion

Although no satisfactory explanations about the collision tumors are however several theories about these tumors: simultaneous proliferation of two different cell lines, common origin of pluripotent progenitor stem cell that differentiates into two components and the chance presence of two independent tumors.
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Figure 3 – Synaptophysin positive in neuroendocrine component of the collision tumor (IHC, ×100).

Figure 4 – MUC2 positive in mucinous component of the collision tumor (IHC, ×40).

Figure 5 – Double metastasis, MUC2 positive, in lymph nodes with metastasis of mucinous adenocarcinoma (IHC, ×100).

Figure 6 – Metastasis in lymph nodes of the neuroendocrine tumor, synaptophysin positive (IHC, ×100).

Figure 7 – Metastasis in lymph nodes of the neuroendocrine tumor chromogranin positive (IHC, ×100).

Questions raised and to which it is difficult to answer are:
- these tumors are mere incidental association?
- these lesions are connected by a causal link?
- can a single carcinogenic agent to interact with two neighboring tissues inducing tumor growth with different histological types in the same organ?

Tumor collision [5, 16–18] and composite tumor [19–26] are more frequent in the stomach. Tumor like lymphoma [27], gastrointestinal stromal tumor [28] and carcinoid [29] can occur in collision with gastric adenocarcinoma. It is not easy to morphologically distinguish a collision tumor from a composite tumor.

Collision tumor of the colon [9, 30] and esophagus [31] are very rare.

A tumor of the “collision” is true coexistence of two malignant neoplasm, histological different, finding themselves at the same body without adding an intermediate cell area [1]. Such tumors consist of components with different histogenesis and tumorigenesis different ways, representing a mosaic of two concurrent but independent tumors that were “bumped” from one another. Thus, the “collision tumors” are morphologically neighborhood synchronous neoplasm that developed every other territories and developed latero-lateral in the same organ.

Without special or unique clinical features, these tumors are difficult to diagnose preoperatively, as in the case presented by us who presented with clinical manifestation of intestinal obstruction and pathological identification of these components is often the only way dual to make a diagnosis [32].
Milne et al. (2004) conducted a molecular analysis of the existence of collision tumors in gastro-esophageal junction and concluded that the diagnosis of these neoplasms has no molecular basis [33].

Due to the rarity of these tumors it is difficult to determine the behavior of collision tumors to determine the component of the tumor will determine the outcome in terms of survival away. It is questionable whether this outcome is dependent on the predominant component of the tumor or collision and/or be more aggressive histological component. Molecular genetic analysis may be of importance for the diagnosis of collision.

Conclusions

Recognition of such collision tumors is important because it will dictate the appropriate treatment strategy dependent biological aggressiveness of the individual components. Precise identification and recognition of both components of the collision tumor is important in guiding decisions on overall prognosis, adjuvant treatment options and survival can be dependent on any of the components.

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References

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