

# Incidentally found abdominal para-aortic and inferior mesenteric root lymph node metastases of prostatic adenocarcinoma in a surgical case with sigmoid colon cancer

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## ABSTRACT

We report a rare case of incidentally found metastatic adenocarcinoma in the abdominal para-aortic and inferior mesenteric root lymph nodes originating from the prostate, at the time of surgery in a patient with sigmoid colon cancer. A man in his mid-seventies was scheduled to undergo laparoscopic-assisted sigmoidectomy and regional lymph node dissection. At the beginning of laparoscopic surgery, a caterpillar-like swelling of abdominal para-aortic lymph nodes was found; the diagnosis using frozen sections was a metastatic adenocarcinoma showing cribriform and solid growth patterns different from typical colorectal cancer. The surgical procedure was changed to an abdominal sigmoidectomy with widely extended lymph node dissection, including inferior mesenteric root lymph nodes and sampling of abdominal para-aortic lymph nodes. The resected sigmoid colon cancer was a papillary/tubular adenocarcinoma invading the muscularis with no lymph node metastasis (pT2N0M0/pStage IIA). Additionally, the presence of a metastatic adenocarcinoma showing cribriform and solid growth patterns different from the primary sigmoid colon cancer was confirmed in the abdominal para-aortic and inferior mesenteric root lymph nodes. The metastatic adenocarcinoma cells were positive for prostate-specific antigen (PSA) and negative for CDX2, indicating that the tumor was from the prostate. A total of ten prostatic core needle biopsy specimens also contained a usual (acinar) adenocarcinoma, with a Gleason score of 4 + 5 = 9. Androgen blockade was performed; the serum PSA level was reduced to 0.06 nanograms per microliter in the subsequent five months. Regardless of radiologic images, examination of serum PSA level is recommended before surgery in male surgical colorectal cancer patients more than 60 years old.

**Key words:** *para-aortic and inferior mesenteric root lymph node, metastatic adenocarcinoma, prostate, sigmoid colon*

## INTRODUCTION

The number of patients identified with colorectal carcinoma who develop multiple primary malignancies during long-term follow-up was already increasing toward the end of the twentieth century<sup>1)</sup>. It has been reported that the most common site of asynchronous secondary primary cancer among male patients with colorectal cancers is the stomach, followed by the lung, prostate, larynx, liver, esophagus, and urinary bladder<sup>1)</sup>.

In Japan, nearly five percent of patients with colorec-

tal cancers have synchronous cancers in other organs<sup>10)</sup>. The most frequent organ is the stomach, followed by the lungs and prostate<sup>10)</sup>; patients with synchronous colorectal and prostatic cancers are common in the Japanese population<sup>10)</sup>. However, no cases of abdominal para-aortic and inferior mesenteric root lymph node metastases originating from the prostate and diagnosed by histopathological examination of sigmoid colon cancer surgery specimens have been reported in the literature.

Here, we report a rare case of synchronous completely curative sigmoid colon adenocarcinoma and

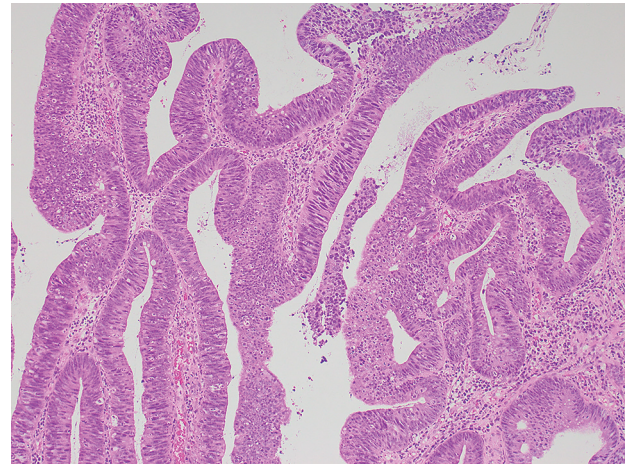
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unresectable advanced prostatic adenocarcinoma; the latter of which comprised of abdominal para-aortic and inferior mesenteric root lymph nodes.

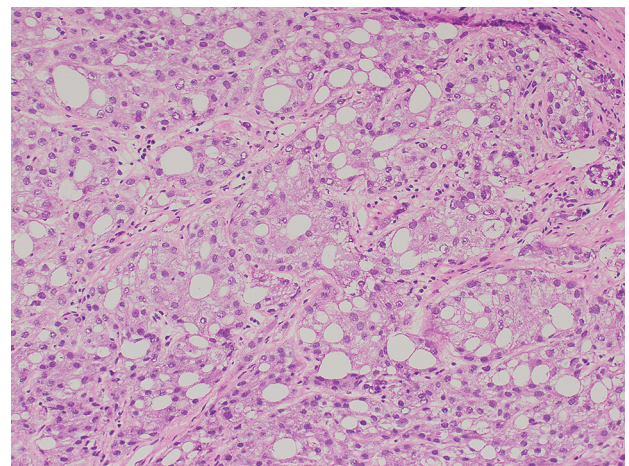
### CASE REPORT

A Japanese man in his mid-seventies with a history of type 2 diabetes mellitus was admitted to the Department of Gastroenterology because his feces tested positive for occult blood. Lower gastrointestinal endoscopic examination revealed an ulcerative tumor in the sigmoid colon, and a total of two biopsy specimens from the tumor contained an adenocarcinoma showing both papillary and tubular growth patterns (Figure 1). Abdominal computed tomography (CT) images showed slight enlargement of the bilateral common iliac lymph nodes, which were not diagnostic of metastatic lymph nodes, and the CT images showed no remarkable swelling of the inferior mesenteric root and abdominal para-aortic lymph nodes. The patient was transferred to the Department of Surgery and scheduled to undergo laparoscope-assisted sigmoidectomy and regional lymph node dissection, including inferior mesenteric root lymph nodes<sup>5)</sup>. At the time of surgery, a caterpillar-like conglomerate of the abdominal para-aortic lymph nodes<sup>5)</sup> was detected; the chief surgeon (D.S.) immediately changed the plan to abdominal surgery. A part of the conglomerate of lymph nodes was submitted for frozen section diagnosis. The frozen section diagnosis was an adenocarcinoma showing cribriform and solid growth patterns, which did not resemble the histological features of the biopsy specimens from the primary sigmoid colon tumor (Figure 2). The attending pathologist (H.N.) informed the surgeon about his finding. The surgical procedure was changed to an abdominal sigmoidectomy with widely extended lymph node dissection, including inferior mesenteric root lymph nodes and abdominal para-aortic lymph nodes. The abdominal para-aortic lymph nodes could not be completely dissected. The resected sigmoid colon cancer was a macroscopically ulcerative advanced tumor measuring 50 mm × 40 mm in size (Figure 3). Microscopically, the papillary/tubular adenocarcinoma had invaded the muscularis with no lymph node metastasis (pT2N0M0/pStage IIA)<sup>7)</sup>. No papillary/tubular adenocarcinoma resembling the primary tumor was found in a total of 36 regional pericolic<sup>5)</sup>/intermediate<sup>5)</sup> lymph nodes examined. The conglomerate of the caterpillar-like abdominal para-aortic lymph nodes (Figure 4) and a singular enlarged inferior mesenteric root lymph node were detected; the cut surfaces of the abdominal para-aortic lymph nodes were yellowish-white in color and not well circumscribed (Figure 5). The metastatic tumor in the inferior mesenteric root lymph nodes also conglomerated. Cut surfaces were yellowish-white in color and not well circumscribed (Figure 6). They were comprised of cribriform and solid adenocarcinoma, which was identical to the adenocarcinoma observed during the frozen section diagnosis. Immunohistochemical analysis was performed using a formalin-fixed paraffin-embedded tissue from the abdominal para-aortic lymph nodes. The

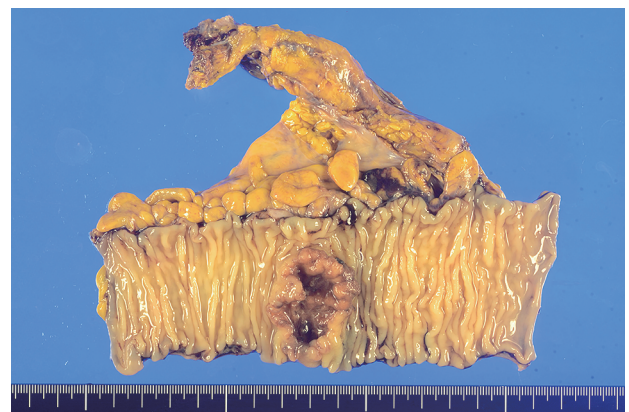
adenocarcinoma cells in the root lymph node were positive for prostate-specific antigen (PSA, Ventana I-VIEW polyclonal) and androgen receptor, not CDX2 (clone



**Figure 1** Middle power view of hematoxylin-eosin staining for biopsy specimens from the sigmoid colon tumor. Columnar adenocarcinoma cells show both papillary and tubular growth patterns.

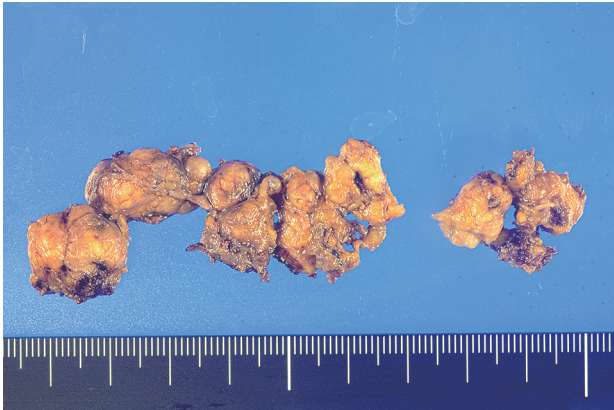


**Figure 2** Middle power view of hematoxylin-eosin staining for frozen sections of abdominal para-aortic lymph nodes. An adenocarcinoma showing both cribriform and solid growth patterns was detected, which does not resemble that in Figure 1.

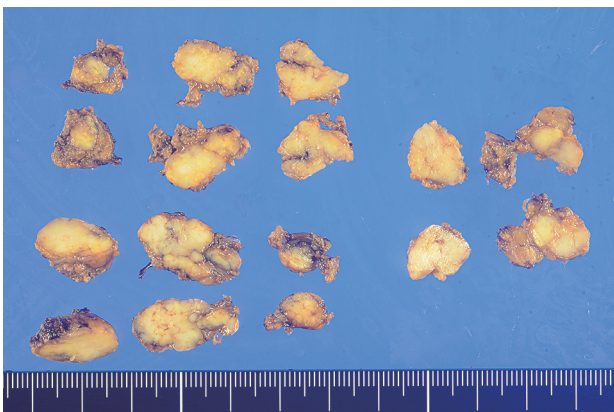


**Figure 3** Macroscopic view of the sigmoid colon adenocarcinoma. The ulcerative advanced carcinoma measures 50 mm × 40 mm in size.

DAK-CDX2), indicative of an adenocarcinoma metastatic from the prostate, with a Gleason score<sup>12)</sup> of 4 + 5 = 9 (Figure 7). Thereafter, the serum level of PSA was examined and was found to be elevated to 17.76 ng/mL (normal range: less than 4 ng/mL). A total of ten prostatic core needle biopsy specimens were obtained from the



**Figure 4** Macroscopic view of formalin-fixed partially-resected abdominal para-aortic lymph nodes (no photomicrographs before formalin-fixation). The lymph nodes conglomerate like caterpillars.



**Figure 5** Cut surfaces of the conglomerated abdominal para-aortic lymph nodes. The cut surfaces are yellowish-white in color and not well circumscribed.



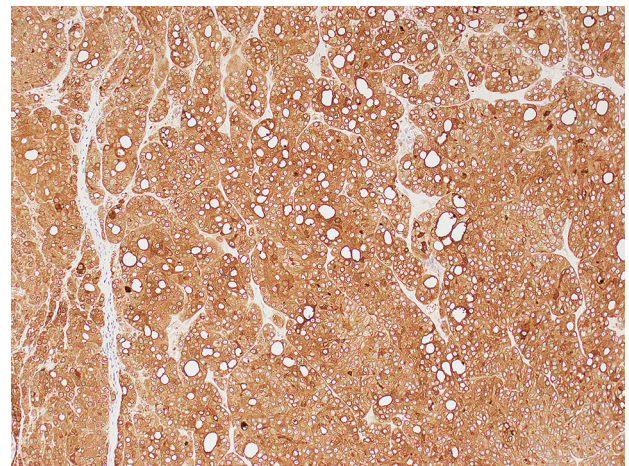
**Figure 6** Cut surfaces of the mesentery. The cut surfaces of the inferior mesenteric root lymph node are also yellowish-white in color and not well circumscribed (located at the right upper corner; black rectangle). No remarkable enlarged lymph nodes were observed in the remaining cut surfaces.

Department of Urology. More than 50% of the prostatic tissue was composed of adenocarcinoma cells: acinar (usual) adenocarcinoma of the prostate with a Gleason score of 4 + 5 = 9 and perineural invasion was observed. Re-evaluation of the abdominal CT images before the operation revealed mild swelling of the bilateral common iliac lymph nodes, but not a metastatic tumor. Androgen blockade was performed; the serum level of PSA was reduced to 0.06 ng/mL during the subsequent five months.

## DISCUSSION

Within the last 20 years, less than ten cases have been reported that involved collision tumors in lymph nodes originating from the prostate and rectum<sup>1,6,8,13)</sup>. To the best of our knowledge, this is the first reported case of synchronous sigmoid colon adenocarcinoma and prostatic adenocarcinoma. The prostatic adenocarcinoma was diagnosed by a pathologist using frozen sections from the abdominal para-aortic lymph node lesion. Moreover, no case involving sigmoid-colon-cancer with synchronous prostatic adenocarcinoma metastatic to the inferior mesenteric root and abdominal para-aortic lymph nodes has been reported.

Pathologists often perform frozen section diagnosis during cancer surgery to either assess surgical resection margins or to assess the extent of the disease. Pathologists examined the frozen sections with a microscope, then suggested positivity and negativity of cancer cells at the time of surgery<sup>4)</sup>. Due to the lower quality of the frozen sections compared to the formalin-fixed paraffin-embedded sections (permanent section), they postponed their final decision until they had examined the formalin-fixed paraffin-embedded sections. The most common cancer site for males in Japan was the stomach (16.3%), followed by the prostate (15.8%), colon/rectum (15.8%), lung (14.8%), and liver (5.0%)<sup>14)</sup>. Therefore, in the present case, the pathologist should have considered the possibility of the prostatic adenocarcinoma metastasizing to the abdominal para-aortic lymph node before



**Figure 7** Immunostaining for prostate-specific antigen (PSA) in the metastatic lymph nodes. Adenocarcinoma cells are strongly positive for PSA.

making his final decision during the surgery.

The most common site of initial metastatic spread of prostatic carcinoma is the pelvic lymph nodes; the obturator and hypogastric lymph nodes are the first to be involved, followed by the external iliac lymph nodes<sup>3)</sup>. The involvement of the external iliac, common iliac, presacral, and presciatic nodes have also been observed<sup>2,9)</sup>. With widely disseminated prostatic cancer, patients have positive nodes in the retroperitoneum, para-aortic region, neck, pelvic cavity, lung hilus, and inguinal region<sup>2,9)</sup>. Although direct evidence is lacking, it is believed that prostatic adenocarcinoma cells in the abdominal para-aortic lymph node can retrogradely metastasize to the inferior mesenteric root lymph nodes.

Prostatic and colorectal cancers are the second and third most common cancers in Japanese men, respectively<sup>14)</sup>. A clear increase in the incidence rate of prostatic cancer was observed among males aged 60 years or older<sup>14)</sup>. Although abdominal CT images show no remarkable findings, serum PSA levels should be examined before surgery in males, especially PSA levels in male colorectal cancer patients who are more than 60 years old, in order to detect advanced prostatic adenocarcinomas. The accumulation of similar cases is needed to determine the clinical and pathological characteristics of synchronous sigmoid colonic and prostatic adenocarcinomas.

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