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A Case Series of Prostate Cancer Metastases to the Sigmoid Mesocolon in Patients with Colorectal Cancer

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This article presents three rare clinical cases of prostate cancer metastasis to the mesosigmoid lymph nodes in patients with primary multiple prostate and sigmoid colon cancer. We were able to find descriptions of only three similar cases in international literature. In all cases, the source of metastasis was confirmed by immunohistochemistry: expression of prostate biomarkers and the absence of expression of intestinal adenocarcinoma markers were detected. Furthermore, we describe a case of the so-called "collision phenomenon" in one of the lymph nodes. The detection of prostate cancer metastases to the mesocolic region demonstrates the interconnection between the lymphatic collectors of the colon and the prostate gland. Therefore, it is important to conduct a thorough pathological examination of the surgical specimen, and in ambiguous cases, immunohistochemistry is indicated for accurate diagnosis and treatment planning. Further studies are needed to investigate the relationship between lymphatic drainage pathways from the prostate and distal colon.

Keywords: collision phenomenon, colorectal cancer, prostate cancer, multiple primary cancer
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Серия случаев метастазирования рака предстательной железы в брыжейку сигмовидной кишки у пациентов с первично-множественным раком

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В данной статье представлены три редких клинических случая метастазирования рака предстательной железы в лимфатические узлы брыжейки сигмовидной кишки у пациентов с первично-множественным раком предстательной железы и сигмовидной кишки. Нам удалось найти описания всего трех подобных случаев в мировой литературе. Во всех случаях источник метастазирования был подтвержден с помощью иммуногистохимического исследования: была выявлена экспрессия биомаркеров предстательной железы и отсутствие экспрессии маркеров кишечной аденокарциномы. Кроме того, нами описан случай так называемого феномена «столкновения» (collision phenomenon) в одном из лимфоузлов. Обнаружение метастазов рака предстательной железы в брыжейке толстой кишки демонстрирует взаимосвязь лимфатических коллекторов толстой кишки и предстательной железы. Таким образом, важно проводить тщательное патоморфологическое исследование хирургического препарата, а в неоднозначных случаях показано проведение иммуногистохимических реакций для точной диагностики и планирования лечения. Необходимы дальнейшие исследования взаимосвязи путей лимфооттока от простаты и дистальных отделов толстой кишки.

Ключевые слова: феномен коллизии, колоректальный рак, рак предстательной железы, первично-множественный рак
Конфликт интересов: авторы заявляют об отсутствии конфликта интересов.

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Introduction

According to the International Agency for Research on Cancer (IARC), prostate cancer (PCa) is the second most common cancer in males worldwide, while colorectal cancer (CRC) ranks third among all malignant tumors [1]. Given the high incidence of these two cancers, the frequency of multiple primary colorectal and prostate cancers is only 0.45 % for synchronous variants and 2.1–10.8 % for metachronous variants among all patients diagnosed with CRC and PCa [2–5]. The most common sites of hematogenous metastases of PCa are the bone (84 %), distant lymph nodes (10.6 %), liver (10.2 %), and thorax (9.1 %), with around 20 % of patients having multiple metastatic sites involved [6]. Sites of lymphatic spread include the perirectal and lower sacral vessel lymphatics, as well as the proximal external iliac, obturator, upper sacral, common iliac, and para-aortic lymph nodes [7].

Metastases of prostate cancer to mesorectal lymph nodes are rare. Only 20 cases have been described in the literature [8–18]. Involvement of mesocolon lymph nodes in the metastatic process is even more rare; we found reports of only three such clinical observations [9, 15, 19].

In our study, we report three other cases of PCa metastases detected in the sigmoid mesocolon lymph nodes in patients with multiple primary sigmoid and prostate cancers. Moreover, in one of these cases, the 'collision effect' in a single lymph node was observed.

Materials and methods

Case 1

An 84-year-old male patient was diagnosed with PCa in 2012, staged as pT3N0M0. The Gleason score at the time of diagnosis was not documented. That year, the patient underwent radical prostatectomy with pelvic lymphadenectomy. Following surgery, he experienced biochemical recurrence and was subsequently treated with hormonal therapy and chemotherapy.

In 2023, disease progression was recorded using positron emission tomography with prostate-specific membrane antigen (PSMA PET-CT), which revealed local recurrence, bone metastases, and metastases to the right lung.

A colonoscopy performed due to recurrent intestinal bleeding revealed a malignant tumor in the distal sigmoid colon. CT scan revealed the tumor was also localized in the distal sigmoid colon, with no evidence of mesocolon invasion. Several enlarged lymph nodes were visible in the paracolic tissue (Fig. 1). The cancer was clinically staged as cT2N0M0 (Stage I).

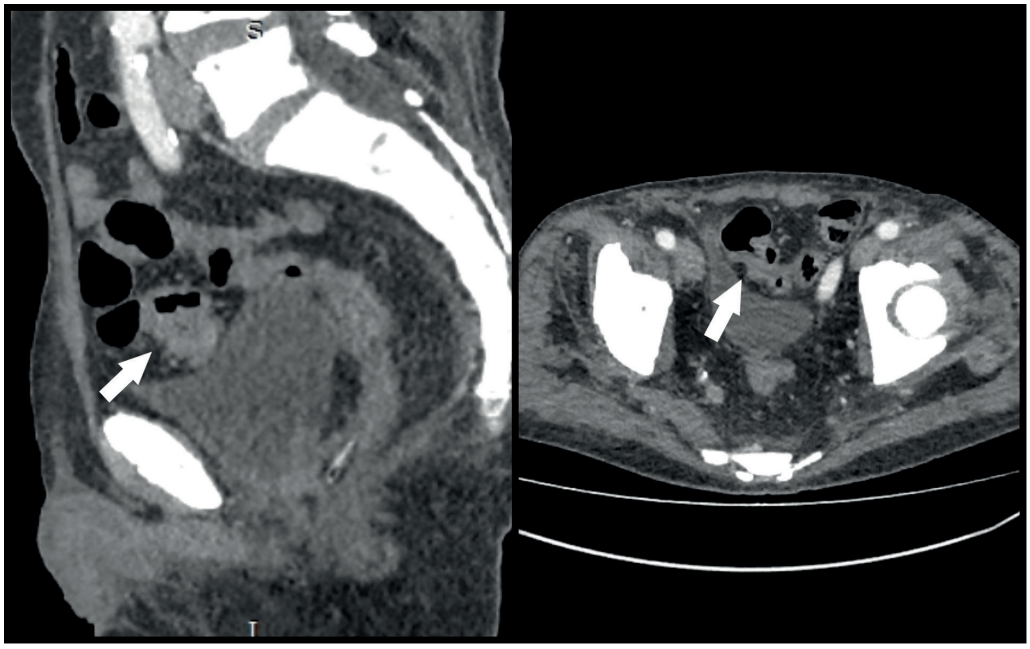

Figure 1. CT image of a tumor in the distal third of the sigmoid colon (white arrows)
Рисунок 1. КТ-изображение опухоли дистальной трети сигмовидной кишки (белые стрелки)

The patient underwent a laparoscopic Hartmann's procedure with D2 lymph node dissection. Given the patient's significant comorbidities, primary anastomosis was not performed.

Case 2

A 76-year-old man had a tumor in the distal third of the sigmoid colon discovered during a colonoscopy. Histologically, it was a moderately differentiated adenocarcinoma. MRI of the pelvic organs revealed a tumor with mesocolic tissue invasion up to 4 mm deep, enlarged pericolic lymph nodes up to 11 mm, as well as an enlarged right external iliac lymph node up to 14 mm and a left external iliac lymph node up to 21 mm. Additionally, extramural lymphovascular invasion of the tumor was detected. In addition to the sigmoid colon cancer, a mass measuring 14 × 5 mm was detected in the left lobe of the prostate gland (Fig. 2).

A transrectal biopsy of the prostate confirmed acinar adenocarcinoma (Gleason score 5 + 3) with evidence of perivascular and perineural invasion. The patient's prostate-specific antigen (PSA) level was markedly elevated at 42.9 ng/mL. CT scans demonstrated retroperitoneal lymph nodes enlargement, including multiple para-aortic and aortocaval lymph nodes measuring up to 11 mm (Fig. 3). The clinical stage of sigmoid colon cancer was determined as cT4aN1M0 III St, while PCa was staged as cT2N1M1 IV St. The para-aortic lymph node enlargement raised the suspicion of metastatic involvement, but the primary origin of the metastases remained uncertain.

The patient underwent laparoscopic anterior resection with D3 lymph node dissection. A sigmorectal anastomosis was successfully created.

Case 3

A 75-year-old male patient presented with symptoms of bowel obstruction, which were managed conservatively. Clinical examination revealed a stenosing tumor in the sigmoid colon, which was histologically verified as colonic adenocarcinoma. Preoperative CT imaging demonstrated a dilated large bowel and a stenosing tumor in the upper sigmoid colon measuring up to 75 mm in length. The clinical stage of the tumor was determined to be cT3N0M0 II St.

The patient underwent urgent surgical resection of the sigmoid colon with D2 lymph node dissection and appendectomy. Due to the presence of colonic obstruction, primary anastomosis was not performed, and an end colostomy was created.

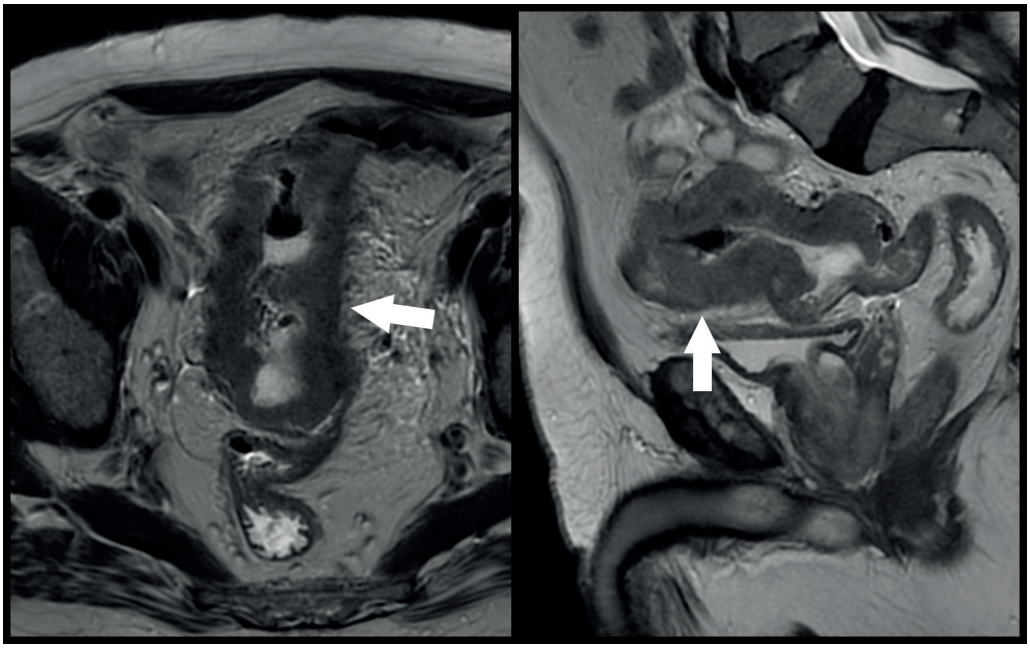

Figure 2. MRI of a tumor in the distal third of the sigmoid colon, up to 80 mm in length, with 4 mm of invasion into the mesocolon tissue (white arrows)

Рисунок 2. МРТ опухоли дистальной трети сигмовидной кишки протяженностью до 80 мм, с инвазией в клетчатку мезоколона на 4 мм (белые стрелки)

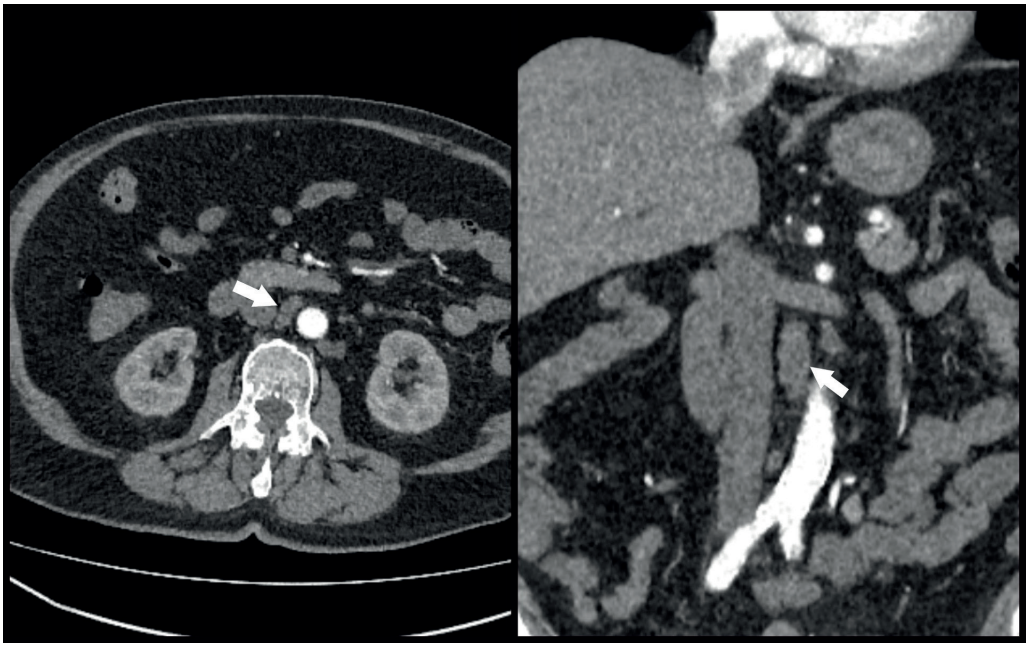

Figure 3. CT image of enlarged retroperitoneal lymph nodes (white arrows)
Рисунок 3. КТ-изображение увеличенных забрюшинных лимфоузлов (белые стрелки)

Results

Case 1

Microscopic examination revealed a low-grade colorectal adenocarcinoma with invasion into the mesocolic fat. A total of 34 lymph nodes were examined by the pathologist, three of which were infiltrated by colorectal carcinoma cells. The pathological stage of CRC was determined to be pT3N1bM0.

Interestingly, lymph nodes from groups 252 and 242 exhibited a pattern distinct from that of colorectal carcinoma. Pathological analysis suggested metastatic involvement of prostatic adenocarcinoma. Immunohistochemistry (IHC) was performed on these lymph nodes, revealing positivity for NKX3.1 and negativity for cytokeratin 20 (CK20) (Fig. 4). NKX3.1, a prostate-specific marker with high sensitivity and specificity, confirmed the presence of PCa metastatic cells, while CK20 negativity excluded colorectal origin of these metastases.

The patient did not receive adjuvant chemotherapy for CRC or any further treatment for PCa due to his comorbid conditions.

Case 2

Histopathological examination of the resected specimen confirmed a well-differentiated adenocarcinoma of the colon without invasion into the mesocoic fat (pT2N0) (Fig. 5, A). A total of 51 lymph nodes were retrieved from the surgical specimen. Notably, one lymph node from group 241 demonstrated metastatic prostate carcinoma. Immunohistochemical examination confirmed metastasis of prostate cancer, revealing the expression of NKX3.1 and the absence of CDX2 expression (Fig. 5, B–D). The NKX3.1 marker played a crucial role in the differential diagnosis of prostate cancer metastasis and colorectal adenocarcinoma, which expresses CDX2.

The patient subsequently received hormonal and antiandrogen therapy for PCa, as well as six cycles of adjuvant XELOX chemotherapy (capecitabine and oxaliplatin) for CRC.

Case 3

Histopathological examination revealed a low-grade adenocarcinoma of the colon with invasion into the anterior abdominal wall (pT4bN1). Metastatic involvement of CRC was identified in two of the 17 resected lymph nodes. Notably, one lymph node contained tumor tissue morphologically resembling prostatic carcinoma. IHC was conducted to clarify the origin of this lesion. The suspicious tissue stained positive for prostatic-specific acid phosphatase (PSAP) and demonstrated nuclear positivity for NKX3.1 (Fig. 6, E, F), confirming

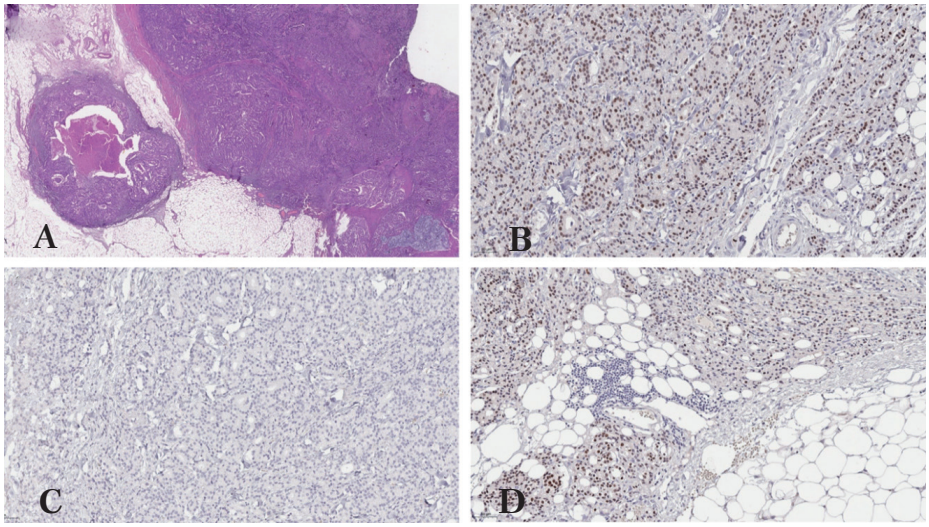

Figure 4. Pathological picture of colon tumor: A — intestinal adenocarcinoma with metastasis of colorectal cancer to the paracolic lymph node (hematoxylin and eosin, ×50); B and C — metastasis of prostate cancer to the lymph node of the mesocolon of the sigmoid colon, pronounced expression of NKX3.1 (×200); D — metastasis of prostate cancer to the lymph node of the sigmoid colon, no expression of CK20 (×200)

Рисунок 4. Патоморфологическая картина опухоли толстой кишки: A — кишечная аденокарцинома с метастазом колоректального рака в параколический лимфоузел (гематоксилин-эозин, ×50); B и C — метастаз рака предстательной железы в лимфоузел мезоколона сигмовидной кишки, выраженная экспрессия NKX3.1 (×200); D — метастаз рака предстательной железы в лимфоузел сигмовидной кишки, экспрессия CK 20 отсутствует (×200)

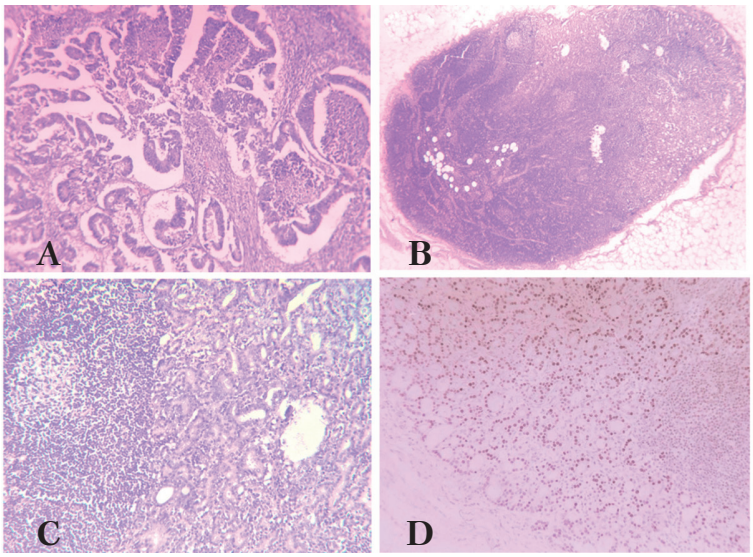

Figure 5. Pathomorphological examination of the removed colon specimen: A — moderately differentiated adenocarcinoma of the sigmoid colon (hematoxylin and eosin, ×200); B — metastasis of prostate adenocarcinoma to a lymph node (hematoxylin and eosin, ×50); C — metastasis of prostate adenocarcinoma to a lymph node of the mesentery of the sigmoid colon (hematoxylin and eosin, ×200); D — pronounced nuclear expression of NKX3.1, indicating metastasis of acinar carcinoma of the prostate gland (×200)

Рисунок 5. Патоморфологическое исследование удаленного препарата толстой кишки: A — умеренно-дифференцированная аденокарцинома сигмовидной кишки (гематоксилин-эозин, ×200); B — метастаз аденокарциномы предстательной железы в лимфоузел (гематоксилин-эозин, ×50); C — метастаз аденокарциномы предстательной железы в лимфоузел брыжейки сигмовидной кишки (гематоксилин-эозин, ×200); D — выраженная ядерная экспрессия NKX3.1, свидетельствующая о метастазе ацинарной карциномы предстательной железы (×200)

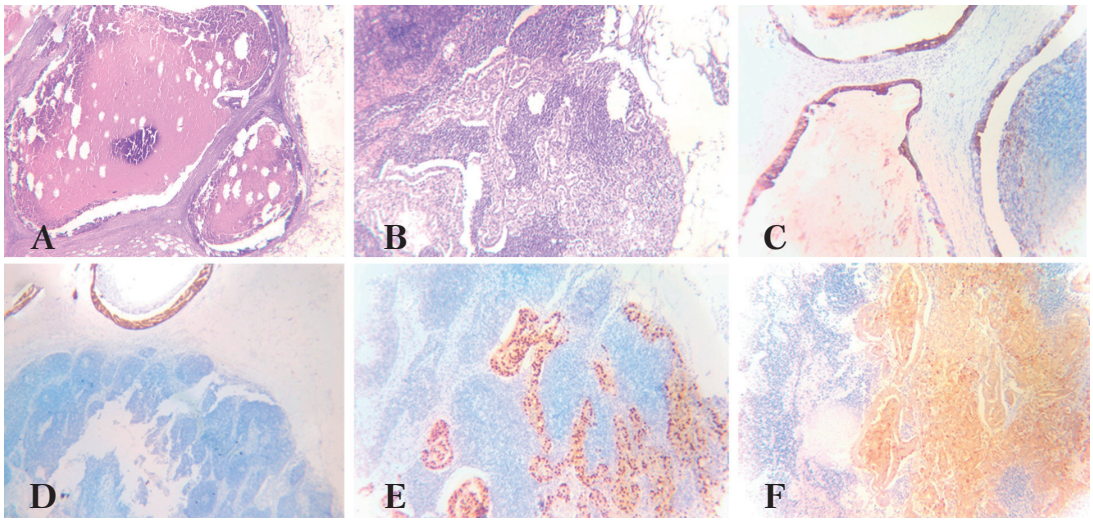

Figure 6. Lymph node with the "collision" phenomenon: A — colorectal carcinoma metastasis to the lymph node (hematoxylin and eosin, ×50); B — a morphological pattern characteristic of prostatic acinar adenocarcinoma is shown (hematoxylin and eosin, ×100); C, D — expression of CDX2 (×50) and CK20 (×100) is noted, confirming metastasis of colorectal adenocarcinoma; E — expression of NKX3.1 in lymph node tissue (×100); F — expression of PSAP, confirming metastasis of prostate cancer (×100)

Рисунок 6. Лимфоузел с феноменом «коллизии»: A — метастаз колоректальной карциномы в лимфоузел (гематоксилин-эозин, ×50); B — представлен морфологический паттерн, характерный для простатической ацинарной аденокарциномы (гематоксилин-эозин, ×100); C, D — отмечается экспрессия CDX2 (×50) и CK20 (×100), подтверждающая метастаз колоректальной аденокарциномы; E — экспрессия NKX3.1 в ткани лимфоузла (×100); F — экспрессия PSAP, подтверждающая метастаз РПЖ (×100)

its prostatic origin. In addition, the tissue also stained positive for CDX2 and CK20 (Fig. 6. C, D), indicative of colorectal carcinoma.

This dual staining pattern confirmed the presence of both PCa and CRC metastases within the same lymph node, a phenomenon known as collision metastases.

Postoperatively, the patient's PSA level was markedly elevated at 47.5 ng/mL. However, further diagnostic evaluation and therapeutic interventions were not performed due to the patient's poor compliance.

Discussion

The lymphatic system of the prostate comprises three major nodal groups: external iliac, internal iliac (hypogastric), and common iliac lymph nodes. The connection between the prostate's lymphatic vessels and the mesorectal lymphatics has been described in the literature. An anatomical study demonstrated small lymphatic vessels originating from the posterior surface of the prostate and extending to the pararectal lymphatic plexus [20].

These anatomical connections explain the spread of malignant cells to mesorectal lymph nodes in patients with advanced PCa. However, the involvement of mesocolic lymph nodes with PCa metastasis is an exceptionally rare phenomenon. This discussion highlights known cases from literature and analyzes the lymphatic spread mechanisms identified in the three presented cases.

Metastases of PCa to mesorectal lymph nodes have been described in 20 cases across 11 publications.

The first case of PCa metastasis to mesorectal lymph nodes was described in 1969 by A.D. Morgan in a 72-year-old patient with rectal cancer who underwent abdominoperineal resection *en bloc* with posterior lobe of the prostate. Pathological examination revealed adenocarcinoma in the rectum and acinar type adenocarcinoma in the prostate, as well as both rectal and prostate adenocarcinoma in two of six lymph nodes [8].

S.K. Murray et al. analyzed 112 rectal resections for rectal adenocarcinoma with positive mesorectal lymph nodes lymph nodes and found that 5 (4.5 %) cases involved metastatic PCa.

In 40 % of these cases (two out of five patients), the mesorectal lymph nodes were initially misdiagnosed as being involved by rectal adenocarcinoma. The study emphasized the importance of considering metastatic PCa in the differential diagnosis of mesorectal lymph nodes. Notably, the study was the first to suggest that mesorectal lymph nodes may serve as regional (N1 in Japanese classification) nodes for both rectal and prostate cancer [10].

N. Mourra et al. reported five cases of PCa metastasis to mesorectal lymph nodes in patients with rectal tumors. One lymph node exhibited a "collision phenomenon", containing cells from both CRC and PCa. The authors proposed a lymphatic drainage pathway from the prostate to the mesorectum via Denonvilliers' fascia. This pathway was compared to the development of lateral extramesorectal lymph node metastases in cases of low rectal cancer [11].

Publications by N. Mourra et al. and S.K. Murray et al. account for half of all reported cases of PCa metastases to mesorectal lymph nodes described in the global literature. Since 2005, references to this metastatic route have increased, predominantly in reports from Japanese researchers. However, these studies are largely limited to isolated clinical cases. Authors hypothesize the existence of a relationship between the hypogastric and mesorectal lymphatic pathways.

The anatomical connection between the prostate and the mesorectum can reasonably explain the presence of PCa metastases in mesorectal lymph nodes. However, the mechanism underlying PCa metastases to the mesentery of the sigmoid colon, as observed in three of our cases, is far less clear. To date, only three such cases have been documented in the global literature.

In 2004, Z.K. Wade et al. described the first case of collision metastases involving PCa and colonic adenocarcinoma. The patient, an 80-year-old man with anemia and a positive fecal occult blood test, had a history of untreated PCa with PSA levels reaching 303 ng/mL. Colonoscopy revealed a malignant tumor 15 cm from the anal verge. Following a low anterior resection, pathological findings showed that 6 of 14 mesenteric lymph nodes were positive for PSA and PSAP, confirming their prostatic origin. One lymph node exhibited tumor cells from both colonic and prostatic carcinomas, representing the first documented case of collision lymph node metastases involving the sigmoid colon [9].

Japanese researchers have reported two additional cases. F. Asahara et al. (2019) described a 64-year-old patient with synchronous PCa and sigmoid colon cancer, along with liver metastases. The patient underwent a Hartmann's procedure with D3 lymph node dissection, which revealed metastatic PCa in a mesocolic lymph node [15].

In 2021, M. Mino et al. reported an incidental finding of PCa metastases during colorectal surgery for sigmoid colon cancer. During laparoscopic-assisted sigmoidectomy, surgeons observed "caterpillar-like swelling" of para-aortic lymph nodes. A frozen section revealed adenocarcinoma with cribriform and solid growth patterns. The surgery was extended to include inferior mesenteric root lymph nodes and abdominal para-aortic lymph nodes. Microscopically, both para-aortic lymph nodes and inferior mesenteric lymph nodes were positive for PSA and negative for CDX2, confirming PCa metastases. Further evaluation revealed an elevated PSA level of 17.76 ng/mL and prostatic adenocarcinoma with perineural invasion, with a Gleason score of 4 + 5 = 9 [19].

These findings highlight the rarity of PCa metastases to mesocolic lymph nodes and underscore the need for further investigation into the mechanisms of atypical lymphatic spread.

In the Table we summarized all cases of spreading PCa to mesocolon and mesorectal lymph nodes with pathological verification we could find in the literature. All these patients underwent colorectal resections for tumors of rectum or sigmoid colon.

Immunohistochemistry (IHC) has emerged as an essential tool for distinguishing between metastases originating from PCa and CRC, particularly in cases where both malignancies coexist or involve overlapping lymph node groups. The application of IHC enables precise identification of tumor origin, which is critical for guiding appropriate clinical management.

Prostate-specific markers such as NKX3.1 and PSA demonstrated high sensitivity and specificity for PCa. NKX3.1, a nuclear transcription factor expressed in prostate epithelial cells, has become a reliable biomarker for identifying metastatic PCa, especially in extraprostatic sites. Similarly, PSA remains a cornerstone marker for prostatic origin, even in

Table. Cases of prostatic carcinoma metastases to mesocolon and mesorectal lymph nodes in patients who underwent colorectal surgery for colorectal cancer

Таблица. Случаи метастазов рака предстательной железы в брыжейку толстой кишки и мезоректальные лимфатические узлы у пациентов, перенесших колоректальную операцию по поводу колоректального рака

Author(s) *Автор(ы)*	Year *Год*	Age *Возраст*	PCa diagnosis prior to colorectal resection *Диагноз РПЖ перед колоректальной резекцией*	Localization of LN *Локализация ЛУ*
A.D. Morgan [8]	1969	72	No / *Нет*	Mesorectum *Мезоректум*
Z.K. Wade et al. [9]	2004	61	Yes / *Да*	Mesorectum *Мезоректум*
Z.K. Wade et al. [9]	2004	80	Yes / *Да*	Mesenteric *Брыжейка*
S.K. Murray et al. [10]	2004	74	Yes / *Да*	Mesorectum *Мезоректум*
S.K. Murray et al. [10]	2004	68	No / *Нет*	Mesorectum *Мезоректум*
S.K. Murray et al. [10]	2004	82	No / *Нет*	Mesorectum *Мезоректум*
S.K. Murray et al. [10]	2004	81	No / *Нет*	Mesorectum *Мезоректум*
S.K. Murray et al. [10]	2004	79	No / *Нет*	Мезоректум *Mesorectum*
N. Mourra et al. [11]	2004	65	Yes / *Да*	Мезоректум *Mesorectum*
N. Mourra et al. [11]	2004	52	No / *Нет*	Mesorectum *Мезоректум*
N. Mourra et al. [11]	2004	67	No / *Нет*	Mesorectum *Мезоректум*
N. Mourra et al. [11]	2004	70	Yes / *Да*	Mesorectum *Мезоректум*
N. Mourra et al. [11]	2004	74	Yes / *Да*	Mesorectum *Мезоректум*
I.J. Park et al. [12]	2005	76	Yes / *Да*	Mesorectum *Мезоректум*
J. Miyauchi et al. [13]	2013	82	Yes / *Да*	Мезоректум *Mesorectum*
J.J. Arenal et al. [14]	2015	68	Yes / *Да*	Mesorectum *Мезоректум*
J.J. Arenal et al. [14]	2015	75	No / *Нет*	Mesorectum *Мезоректум*
F. Asahara et al. [15]	2019	82	Yes / *Да*	Mesorectum *Мезоректум*
F. Asahara et al. [15]	2019	64	Yes / *Да*	Mesocolon *Мезоколон*
A. Ichihara et al. [16]	2020	75	Yes / *Да*	Mesorectum *Мезоректум*
M. Mino et al. [19]	2021	mid-seventies *около 70*	No / *Нет*	Mesocolon *Мезоколон*
T. Udagawa et al. [17]	2022	67	Yes / *Да*	Mesorectum *Мезоректум*
D. Kato et al. [18]	2023	65	No / *Нет*	Mesorectum *Мезоректум*

Note: *PC — prostate cancer, LN — lymph node.*
Примечание: *РПЖ — рак предстательной железы, ЛУ — лимфоузел.*

poorly differentiated cases where morphologic clues may be insufficient.

In contrast, colorectal adenocarcinoma is typically characterized by positivity for markers such as CK20 and CDX2. CDX2 is a nuclear transcription factor expressed in intestinal epithelial cells and is highly specific for tumors of colorectal origin. CK20, a cytoplasmic marker, further aids in confirming CRC when used in conjunction with CDX2.

In one of our cases (Case 3), a lymph node from the mesocolon exhibited dual staining patterns: positivity for NKX3.1 and PSA, confirming metastatic PCa, alongside positivity for CDX2 and CK20, indicative of CRC. This finding underscored the phenomenon of "collision metastases", where two distinct malignancies coexist within a single lymph node. Without IHC, this rare and diagnostically complex scenario could have been misinterpreted, leading to suboptimal treatment strategies.

Moreover, IHC plays a vital role in addressing diagnostic discrepancies observed in cases where metastatic PCa is mistaken for CRC, particularly in mesorectal or mesocolic lymph nodes. As described in the literature, up to 40 % of such cases were initially misdiagnosed due to morphological similarities between the two cancers [10]. The routine use of IHC markers in pathological assessment reduces these errors, ensuring accurate tumor classification and optimal therapeutic decision-making.

Given the diagnostic value of immunohistochemistry and its ability to resolve complex diagnostic issues, this method should be adopted as the standard for histopathological examination of specimens in patients with multiple primary neoplasms or unexpected lymph node involvement. Further exploration may be needed to integrate additional biomarkers, such as PSAP or androgen receptor (AR), to further improve diagnostic accuracy in complex cases.

The impact of metastatic collision on prognosis in colorectal cancer and prostate cancer remains unknown. Further studies are needed to assess the impact of the collision phenomenon on overall survival, disease-free survival, and treatment response in patients with multiple primary neoplasms.

Our study presents the largest number of cases of prostate cancer metastases to the mesosigmoid colon in the global literature. Based on our findings and literature review, several key points can be highlighted.

The incidence of multiple primary malignancies of the prostate and colon continues to rise, ranging from 0.45 % for synchronous variants and 2.1–10.8 % for metachronous variants [2–5]. This highlights a significant overlap in the occurrence of these malignancies. Routine PSA testing in men diagnosed with CRC could be beneficial. M.K. Terris and S.M. Wren previously recommended PSA screening for all men over 50 years of age with a life expectancy exceeding 10 years prior to colorectal surgery. This screening included transrectal prostate biopsy for men with elevated PSA levels (>4 ng/mL) or abnormal findings on digital rectal examination [21]. Conversely, routine colonoscopy may also be advisable for men newly diagnosed with PCa to detect CRC at an early stage.

The occurrence of PCa metastases in the lymph nodes of the mesorectum can be explained by the presence of lymphatic ducts connecting the posterior surface of the prostate with the perirectal lymphatic plexus. However, metastases to the mesentery of the sigmoid colon likely follow a more complex retrograde pathway, as described by M. Mino et al. [19]. This mechanism suggests an initial involvement of para-aortic lymph nodes, followed by retrograde metastasis along lymphatic vessels associated with the inferior mesenteric artery, ultimately reaching the mesocolon. Notably, our Case 2 challenges this hypothesis, as the group 253 lymph nodes were unaffected despite extensive D3 lymph node dissection.

Accurate diagnosis of primary multiple malignancies of the prostate and colon relies heavily on meticulous pathological evaluation. Among patients with PCa metastases to mesocolic and mesorectal lymph nodes, 43.5 % (10 out of 23) had no prior history of PCa, with the diagnosis established only after pathologists identified atypical cells and confirmed them using IHC. A similar diagnostic scenario occurred in our Case 3.

Pathologists must also be aware of the rare phenomenon of "collision tumors", in which two distinct malignancies coexist within a single lymph node. Our study documented one case of collision metastases in the mesocolon (Case 3), meeting the criteria described in the literature: a) the tumors originate from anatomically separate primary sites and distinct cell types; b) the lymph node contains discrete areas with distinct histological patterns; c) no transitional zone is observed between the two malignancies

[9, 13, 22]. To date, only seven cases of collision metastases involving PCa and CRC have been reported [8–11, 13, 15].

Conclusion

Our findings contribute to a growing body of evidence regarding the rare phenomenon of prostate cancer metastases to mesocolic lymph nodes and emphasize the importance of understanding atypical metastatic pathways. While the anatomical connection between the prostate and mesorectal lymphatic systems is well-documented, the mechanisms underlying prostate cancer metastases to the sigmoid mesocolon remain unclear. The retrograde lymphatic pathway described in the literature offers a potential explanation but requires further investigation to confirm its validity.

Our data also underscore the increasing prevalence of synchronous primary malignancies of the prostate and colon, suggesting the need for routine PSA screening in men diagnosed with colorectal cancer and regular colonoscopic evaluation for men with prostate cancer.

Further anatomical and clinical studies are required to better understand the mechanisms of lymphatic metastases and to refine diagnostic

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