

Case report

Generalized Scrotal Edema as the First Sign of Gastric Cancer: A Case Report

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HIGHLIGHTS

- Metastases to the scrotum and penis are very rare, and being the initial manifestation of occult primary tumors is even rarer.
- This is the first report of a scrotal and penile metastasis from gastric adenocarcinoma in Iran.

ARTICLE INFO

Receive Date: 03 August 2021

Accept Date: 30 August 2021

Available online: 02 September 2021

DOI:10.22034/TRU.2021.298093.1078

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Introduction

Gastric cancer (GC) is one of the most common cancers. It can also be said that the second leading cause of death due to cancer is gastric cancer (1). It is common to say that gastric cancer is asymptomatic in the early stages and is seen in only 30 to 40% of distant metastases (2). The most common sites of metastasis are the peritoneum, lymph nodes, and liver. In more advanced stages of

ABSTRACT

Introduction

Gastric cancer is one of the most common cancers which is capable of distant metastasis but Scrotal and penile metastasis are very unusual, and occasionally, the initial manifestation of a latent primary tumor is even rarer. Mechanisms of gastric metastasis have been suggested through different pathways.

Case presentation

In this study, we present a case in which a patient presented with painless swelling of the testicles and penis. The main was in the stomach. As far as we know, this is the first report of a scrotal and penile metastasis from gastric adenocarcinoma in Iran, which at the time of diagnosis of these metastases had not yet been diagnosed with gastric cancer.

Conclusions

Therefore, the tumors of the gastric can metastasize to the genital area through lymphatic vessels in a reversible pathway. However, Proper imaging studies can identify early sites.

Keywords: Gastric Adenocarcinoma; Scrotum; Lymphedema; Swelling

cancer, gastric cancer can affect the lungs, brain, bones, and soft tissues. Crockenberg's tumor is also common, but metastases from gastric cancers to ovarian are uncommon in women, and it is also rare in men to the genital area, with only a few cases reported (3-5).

There are known types of skin diseases that can manifest themselves in the form of scrotal pathologies. One of these very rare cases is metastasis to the scrotum.

However, primary skin involvement is not uncommon. In a retrospective study of 4020 patients with metastatic cancer (1, 2). 10% cases of skin metastasis were observed, of which only one case of scrotal metastasis was reported with a prevalence of 0.02%.

Scrotal wall involvement due to metastasis is very unusual, and occasionally, the initial manifestations of primary occult cancers are less common. Various pathways have been suggested for the spread of gastric cancer, including hematogenous, lymphatic vessels, through the peritoneal surface and directly from the stomach wall. Metastasis follows a reversible pathway through the vas deferens or lymphatic vessels. Metastasis to the genital area is also uncommon. We present here a 53-year-old patient with unusual genital lymphedema as the initial manifestation of Gastric cancer (6, 7).

Case presentation

A 59-years old man with a history of tobacco abuse and addiction presented to the Urology clinic with a one-month history of bilateral progressive scrotal & penile swelling which was concerning for scrotal cellulitis. He also complained of frequent dysuria, nocturia, post-void dribbling. The patient was afebrile with normal vital signs. He had dyspnea, moderate painless pitting edema of suprapubic area, chronic cluster headache, and mild hyperlipidemia with no ascites, masses, hepatosplenomegaly, or stigmata of liver disease.

Performed on physical examination, the patient was afebrile and hemodynamically stable. His scrotum was edematous with areas of induration, erythema. Additionally, no overt purulence, fluctuance, or crepitus were identified. There was left side palpable inguinal lymphadenopathy and also bilateral hydrocele was observable (Figure 1).

Workup for the scrotal swelling included a diagnostic ultrasound of the abdomen and pelvis, which showed no scrotal pathology (Figure 2). Equivocal involvement of the bilateral epididymis and grade II hydronephrosis, para-aortic lymphadenopathy, mild two-sided Piusel with left preference, increased scrotal thickness (21 mm) and hyper-vascular was noted on the ultrasound at that time. The increased vascular flow of the epididymis and testes suggested epididymo-orchitis, therefore a Color Doppler ultrasound of the normal testis was performed for the patient. Increased vascularity of the mass lesion and bilateral small hydrocele were noted on color Doppler evaluation. Normal size and echo of the testicles and normal epididymis were also evident.

Medication history was as follows: tablet verapamil 80mg, Tablet rizatriptan 5mg, Tablet topiramate 25 mg, Tablet atorvastatin 20 mg, Tablet terazosin 2mg, Syrup. Methadone 5cc.

Primary laboratory tests result determined WBC: 12300 (N=HB:11.2-10.3-9.9), Urea:28,Cr:1.49, UA:

WBC=24-26,nitrate positive, UC: positive for E. coli colony count more than 100000, ESR :43, LDH:11700.

Concerning the possibility of genital lymphedema as a side effect of Verapamil and Topiramate usage, a neurology consult was performed, the results revealed that due to long-term use (10 years) of these drugs, lymphedema, in this case, is not possible. Abdominopelvic Magnetic Resonance Imaging (MRI) with and without contrast showed: Diffuse scrotum edema and enhancement with bilateral hydrocele (Rule Out (R/O) of Fournier gangrene). Diffuse subcutaneous edema, ascites, and pleural effusion (R/O Congestive heart failure (CHF)). Then, according to the report of pleural effusion in MRI and rejection of CHF, cardiac and echo consultation was performed, which showed that CHF is not relevant for the patient.

Finally, endoscopy was performed for the patient due to hematemesis and nausea, and vomiting that was resistant to medical therapy. Based on the endoscopy findings some accumulation of fresh blood was seen in the distal esophagus that after suction, no site of bleeding was found. A large mass with an ulcerative surface was seen in cardia (without the involvement of the Lower Esophageal Sphincter (LES)). Eventually, the patient was diagnosed with gastric adenocarcinoma based on the final pathology report.

The patient was then transferred to the gastrointestinal (GI) ward due to continued GI bleeding and vomiting. The patient was prescribed to continue treatment with Pentazole and maintain hemoglobin above 8. Then, a surgery consultant was performed for the patient, which showed that palliative surgery is necessary according to Gastric Outlet Obstruction (GOO) report. Finally, the patient underwent gastrectomy and reconstruction by Roux-en-Y (RY) method. Esophageal-jejunum anastomosis, retroperitoneal and bladder involvement, posterior peritoneal fibrosis, and compressive effects on the bladder and kidneys were significant. Subsequently, the patient experienced severe hypotension and a rise in creatinine to 2.25 due to anuria. The patient then underwent emergency hemodialysis. Finally, the patient died of cardiac-respiratory arrest.

Discussion

Scrotum and penis are uncommon metastasis sites. In this patient, the gastric tumor was the main lesion of the genital lymphedema, according to the patient's history of progressive gastric tumor and pathology results. Based on our literature review, the abdominal is known to be the most prevalent primary site of genital area metastasis (8). The other main origins of genital metastasis are prostate, liver, kidney, pancreas, lung, and colon (9). The prevalence of testicular and genital metastasis is very unusual, ranging from 0.02 to 2.5% (10).

Several pathways can cause metastatic cancers from the gastric to the genital area, such as lymphatic, vascular,



Figure 1. Edema of the scrotum and penis due to cancer

hematogenous, and peritoneal (10, 11). The main route suggested for metastasis is the lymphatic and vascular pathways (3). Based on the findings, we also report gastric cancer metastasis to the spermatic cord via the lymphatic pathway. The lymphatic spread has been diagnosed for gastric cancer, and cases of this spread have even been seen through the lymphatic vessels in the early stages of cancer. (12). The paraaortic lymph node is one of the final gastric lymphatic drainage places (number 16) according to the gastric nodal places defined by the Japanese gastric cancer association (13). Lymph flows from the upper third of the stomach through the lymphatic vessels along the left side of the stomach, the posterior of the stomach, the spleen, and the arteries of the left lower phrenic. Lymph flows from the lower third of the stomach through the lymphatic vessels along the common hepatic artery and the root of the upper mesenteric artery, which drains into the hepatoduodenal and retro-pancreatic lymph nodes. These lymph nodes eventually enter the paraaortic lymph nodes (14).

Also, a para-aortic lymph node pathway connects the aortocaval and the lymph nodes of the spermatic cord. It is known that the main pathway of metastases from testicular cancer bypasses the pelvic lymph nodes. The lymphatic vessels of the testicles are located next to the gonadal blood vessels and rise through the spermatic cord and pass through the anterior part of the psoas muscle and terminate in the paracaval and para-aortic at the level of the kidney hilum. Metastasis also spreads downward in a reversible pathway (15). So, this return path of the lymph nodes can cause gastric tumor metastasis to the genital area.

Clinically, a penile and scrotal wall metastasis is usually felt as a firm mass and in appearance shows painless swelling. Ultrasound also showed a solid mass that was hypovacic and variable echogenic (2). To evaluate patients with testicular edema, ultrasound is



Figure 2. Skin induration due to metastatic gastric cancer

the first imaging modality that has 100% sensitivity in the classification of testicular lesions and 98 to 100% sensitivity in distinguishing intra-testicular lesions from extra-testicular lesions (3-5).

Our report shows a rare occurrence of scrotal and penile swelling as an initial presentation of an aggressive metastatic gastric adenocarcinoma. When a patient presents with genital lymphedema and acute swelling, a testicular neoplasm is suspected based on the clinical examination, serum tumor markers, and ultra-sonographic examination of the testes. Inguinal orchiectomy is the initial standard of care, and pathologic examination of a resected testis renders the confirmatory diagnosis. Therefore, recent systematic review articles have shown that rare cancers are more associated with poorly differentiated GCs and sometimes present as a unilateral palpable mass in the genital area. Therefore, the palpable masses of the genital area in men, especially those with a history of gastric cancer, should not be ignored. (12). Although the prognosis is poor, successful resection of such a metastasis followed by chemoradiotherapy would achieve some survival benefits.

Conclusions

In conclusion, the tumor of the gastric can metastasize to the genital area through lymphatic vessels in a reversible pathway. This metastatic pathway overlays with that of metastasis from primary Testicular cancer. However, Proper imaging studies can identify early sites (stomach tumor vs. testicular tumor). If imaging results strongly show metastasis, before systemic chemotherapy, simple US-guided biopsy can be used for verification rather than orchiectomy. Ultimately, Metastasis should always be considered in patients with a history of cancer, even if the patient underwent treatment years ago, including adjuvant chemotherapy and surgery.

Authors' contributions

All authors contributed equally.

Acknowledgments

Special thanks to the Department of Urology, Isfahan University of Medical Sciences, Isfahan, Iran.

Conflict of interest

All authors declare that there are no conflicts of interest.

Funding

There is no funding.

Ethical statement

Written informed consent was obtained from the patient for the publication of his case.

Data availability

Data will be provided by the corresponding author on request.

Abbreviations

CHF	Congestive heart failure
GC	Gastric cancer
GI	Gastrointestinal
GOO	Gastric outlet obstruction
LES	Lower esophageal sphincter
MRI	Magnetic resonance imaging
RY	Roux-en-Y

References

1. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer*. 2015;136(5):E359-86.
2. Riihimäki M, Hemminki A, Sundquist K, Sundquist J, Hemminki K. Metastatic spread in patients with gastric cancer. *Oncotarget*. 2016;7(32):52307-16.
3. Salesi N, Fabi A, Di Cocco B, Marandino F, Pizzi G, Vecchione A, et al. Testis metastasis as an initial manifestation of an occult gastrointestinal cancer. *Anticancer research*. 2004;24(2c):1093-6.
4. Russo P, Brady MS, Conlon K, Hajdu SI, Fair WR, Herr HW, et al. Adult urological sarcoma. *J Urol*. 1992;147(4):1032-6; discussion 6-7.
5. Bhosale PR, Patnana M, Viswanathan C, Szklaruk J. The inguinal canal: anatomy and imaging features of common and uncommon masses. *Radiographics : a review publication of the Radiological Society of North America, Inc*. 2008;28(3):819-35; quiz 913.
6. Fong Y, Coit DG, Woodruff JM, Brennan MF. Lymph node metastasis from soft tissue sarcoma in adults. Analysis of data from a prospective database of 1772 sarcoma patients. *Annals of surgery*. 1993;217(1):72-7.
7. Keenan RA, Nic An Riogh AU, Stroiescu A, Fuentes A, Heneghan J, Cullen IM, et al. Paratesticular sarcomas: a case series and literature review. *Therapeutic advances in urology*. 2019;11:1756287218818029.
8. Parra RO, Boullier J, Mehan DJ. Malignant tumor of the colon metastatic to the epididymis as a first sign of recurrence of colon cancer. *Missouri medicine*. 1992;89(5):298-300.
9. Hirano D, Ohkawa M, Hasegawa R, Okada N, Ishizuka N, Kusumi Y. Metastatic Tumor of the Spermatic Cord in Adults: A Case Report and Review. *Case reports in urology*. 2015;2015:747261.
10. Li B, Cai H, Kang ZC, Wu H, Hou JG, Ma LY. Testicular metastasis from gastric carcinoma: A case report. *World journal of gastroenterology*. 2015;21(21):6764-8.
11. Qazi HA, Manikandan R, Foster CS, Fordham MV. Testicular metastasis from gastric carcinoma. *Urology*. 2006;68(4):890.e7-8.
12. Akagi T, Shiraishi N, Kitano S. Lymph node metastasis of gastric cancer. *Cancers*. 2011;3(2):2141-59.
13. Japanese classification of gastric carcinoma: 3rd English edition. *Gastric cancer : official journal of the International Gastric Cancer Association and the Japanese Gastric Cancer Association*. 2011;14(2):101-12.
14. Young JJ, Pahwa A, Patel M, Jude CM, Nguyen M, Deshmukh M, et al. Ligaments and Lymphatic Pathways in Gastric Adenocarcinoma. *Radiographics : a review publication of the Radiological Society of North America, Inc*. 2019;39(3):668-89.
15. Paño B, Sebastià C, Buñesch L, Mestres J, Salvador R, Macías NG, et al. Pathways of lymphatic spread in male urogenital pelvic malignancies. *Radiographics : a review publication of the Radiological Society of North America, Inc*. 2011;31(1):135-60.

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How to cite this article

Kazemi R, Taheri D, Eslamian M, Ghadirzade Arani L, Mohammadpour SH, Bahrami Samani H, Salehi H. Generalized Scrotal Edema as the First Sign of Gastric Cancer: A Case Report.

Translational Research in Urology. 2021 Aug;3(3):90-94.

DOI: [10.22034/TRU.2021.298093.1078](https://doi.org/10.22034/TRU.2021.298093.1078)

URL: https://www.transresurology.com/article_135911.html

