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LETTER TO THE EDITOR

Others

Metastasis to scrotal skin as the initial manifestation in a patient with rectal adenocarcinoma: a rare case report and literature review

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Dear Editor,

We present here a rare case of rectal adenocarcinoma metastasized to scrotum skin that was detected in a 36-year-old man. In addition, we have reviewed the Chinese and English literature for reports of internal malignancy secondary to scrotum skin. To our best knowledge, there are forty cases reported in literature.

Rectal adenocarcinoma mainly metastasizes to the lymph nodes, liver, lung and bone.[1] Cutaneous metastasis of rectal carcinoma is rare, which mostly occur in the skin of the abdomen and crissum. Scrotum skin is rarely involved. Cutaneous metastasis is generally an indication of widespread disease.[2]

A 36-year-old male patient was admitted to our hospital due to the swelling of the scrotum in July 2012. The patient had been undergone with lymphadenectomy due to bubo when he was a child. Some scars could be seen in his bilateral legs (**Figure 1a**). In March 2010, he had been treated with rectal resection and Colocutaneous colostomy due to colorectal adenocarcinoma in another hospital. The patient complained of dysuria as well as the pain of scrotum and penis more than 1-month prior to the visit. The physical examination revealed the multiple papules in the scrotum with obvious tenderness, and enlargement of the inguinal lymph nodes (**Figure 1a**). About 2 weeks later, the scrotum papules and plaques began to ulcerate and involved in the penis. Biopsies of the ulcer confirmed metastatic adenocarcinoma that was infiltrating the scrotum skin (**Figure 1b**). Tumor is immunoreactive for CK7 and CK20 (**Figure 1c** and **1d**). No other distance organs were involved by CT. The patient was subsequently treated with suprapubic urinary diversion and two cycles of chemotherapy consisting of gemcitabine and docetaxel. Then, he refused to accept treatment further and was dead due to liver metastasis after discovering scrotum skin metastasis for 1 year.

Cutaneous metastases originating from internal malignancies are uncommon.[3] The most probable sites of cutaneous metastases are the skin of the anterior chest, followed by the abdomen and back.[4] Scrotum skin is unusual invaded. Compared with other histologic subtypes, adenocarcinomas have a higher occurrence to give rise to cutaneous scrotum metastases. The first case of cutaneous scrotum metastasis was reported in 1939. Until now, only 40 such cases had been published in the literature written in Chinese and English (**Supplementary Table 1**). The mean reported patient age was 55.5 years, range from 2 years old to 84 years old. The most frequent symptom was cutaneous nodules, which happened in 24 patients. Another manifestation included papules, plaques, edema, and ulcer. Skin lesions have been reported in seven patients. Some patients complained of pain associated with ulcer, while others were just painless ulcer or nodules. The gastrointestinal system was the most common organ system metastasized to scrotum skin (17 patients). The urogenital system was the second most frequent sites of cancer origin responsible for cutaneous scrotum metastasis (14 patients), which included prostate, bladder, kidney and urethra. The median interval between diagnosis of the primary tumor and subsequent metastasis to the scrotum was just 6 months (range 1–27 months).

In addition to single case reports, we reviewed larger case series, which contained data regarding cutaneous metastases. In two series of patients performed by Lookingbill *et al.*[3,5] 1420 (10.4%) of 4020 patients were found to have skin involvement. However, just one case had metastasized to the scrotum skin. Reingold[4] analyzed that 32 of their 2300 patients with carcinoma had cutaneous metastases. However, no case metastasized to the scrotum skin.

The scrotum and penile skin are organs that rarely develop metastases. Maestro *et al.*[6] speculates there are two theories have been postulated to explain this low frequency of metastasis, while their rich vascularization (blood and lymphatic) should result in the opposite. First, perhaps the scrotum and penis have a distinctive defense mechanism, which is not yet discovered (similar to the spleen). Second, these patients with advanced stages of disseminated neoplastic disease pay little attention to the exploration and evaluation of the scrotum and penis, even where a nodule is discovered.

The diagnosis of cutaneous scrotum metastases is based on clinical suspicion and physical examination, but the best diagnostic method is biopsy or surgical specimen.[6] Treatment depends on the location, size, symptomatology and patient's prognosis and so on, but average survival in these patients is generally short due to metastatic progression. Treatment may consist of local tumor excision, radiation therapy, and radical surgical procedures for cutaneous scrotum metastatic

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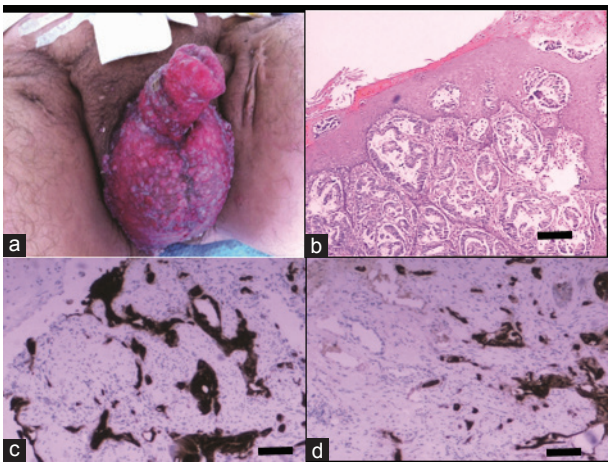

Figure 1: (**a**) Metastasis to the scrotum and penis: Extensive papules. (**b**) Photomicrography of pathologic specimen revealing poor-differentiated adenocarcinoma of the scrotum skin. Scale bar = 200 μm. (**c**) Immunohistochemical staining shows expression of CK7. Scale bar = 200 μm. (**d**) Immunohistochemical staining shows expression of CK20. Scale bar = 200 μm.

tumors. With the development of the chemotherapeutic drugs, such as vinorelbine, gemcitabine, paclitaxel and docetaxel, some researchers began to use chemotherapy, but the effect has not been identified as definitive recommendations due to lack of a sufficient number of cases to identify.[7–9]

While cutaneous metastasis tends to show a poor prognosis. In literature, the average time from diagnosis of cutaneous scrotum metastases to death is ranging from 1 to 27 months. Because metastasis to scrotum skin, in most cases, tends to be part of the widely disseminated disease.

In conclusion, any new skin lesions should be suspected as metastatic in a patient with a prior history of malignant carcinoma. Although treatment of cutaneous scrotum metastasis is almost always palliative, early recognition may be required for improving survival rate.

AUTHOR CONTRIBUTIONS

WG participated in the design of the study, drafted the manuscript and performed the literature review. GBJ have made substantial contributions to draft the manuscript and perform the literature review. NEL have been involved in drafting the manuscript or revising it critically for important intellectual content; GJ have made substantial contributions to acquisition of figure, and interpretation of data; WDL have given final approval of the version to be published. All authors read and approved the final manuscript.

COMPETING FINANCIAL INTERESTS

The authors declare no competing financial interests.

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Supplementary information is linked to the online version of the paper on the *Asian Journal of Andrology* website.

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Supplementary Table 1a: Reports of scrotal metastasis

Report	*Age (years)*	*Primary origin*	*Pathological type*	*Therapy*	*Symptoms*	*Survival (months)*
1	55	Kidney	RCC	None	Ulcerated nodule	1
2	50	Kidney	RCC	NF	Nodule	NF
3	83	Prostate	Adenocarcinoma	NF	Nodule	NF
4	54	Prostate	Adenocarcinoma	Chemotherapy	Nodules	6
5	70	Lung	SCC	None	Nodule	6
6	73	Prostate	Adenocarcinoma	None	Ulcerated nodule	1
7	21	Stomach	Signet ring cell carcinoma	Chemotherapy	Hemorrhagic ulceration	6.5
8	72	Prostate	Adenocarcinoma	NF	Painless nodule	4
9	60	Colorectum	Adenocarcinoma	NF	Nodule	NF
10	70	Prostate	Adenocarcinoma	Surgery	Scrotal edema	>24
11	67	Stomach	Adenocarcinoma	Surgery	Nodule	NF
12	NF	Colorectum	Adenocarcinoma	NF	Nodule	NF
13*	62	Ileum	Leiomyosarcoma	Surgery + chemotherapy	Mass	2
14	NF	Lung	Adenocarcinoma	NF	NF	NF
15	77	Lung	Adenocarcinoma	None	Tender	1
16	79	Bladder	TCC	Chemotherapy	Tender	>15
17	30	Colorectum	Adenocarcinoma	Chemotherapy	Tender/ulcers	NF
18	59	Stomach	Adenocarcinoma	Unknown	Mass	Unknown
19	66	Colorectum	Adenocarcinoma	Unknown	Mass	Unknown
20	84	Urethera	TCC	Chemotherapy	NF	1
21	50	Colorectum	Adenocarcinoma	NF	None	7
22	33	Lymphaden	Large cell lymphoma	None	Ulcerative nodule	Unknown
23	14	Retroperitoneum	Malignant mesenchymoma	Surgery	Mass/nodule	6
24	2	Retroperitoneum	Ganglio-neuroblastoma	Surgery	Mass	8
25	60	Kidney	RCC	Surgery	Mass	17
26	69	Colorectum	Adenocarcinoma	NF	Plaque/nodule	6
27	56	Prostate	Adenocarcinoma	NF	Edema/plaque	NF
28	60	Prostate	Small cell carcinoma	None	Papule	1
29	53	Stomach	Adenocarcinoma	Unknown	Mass/edema	Unknown
30	65	Prostate	Adenocarcinoma	None	Papule	2
31	45	Bladder	TCC	NF	Verrucous papule/nodule	NF
32	72	Colorectal	Adenocarcinoma	NF	Painless ulcer	NF
33	52	Lung	Mucoepidermoid carcinoma	Chemotherapy	Abscess	1.5
34	47	Thyroid	Hurthle cell carcinoma	NF	Ulcerated nodule/edema	<12
35	5	Kidney	Wilms tumor	Surgery + chemotherapy	Nontender scrotal mass	>11
36	79	Colorectum	Adenocarcinoma	Palliative	Papule/nodule	6
37	41	Omentum	NHL	Unknown	Edema	Unknown
38	75	Stomach	Adenocarcinoma	Unknown	Nodules/priapism	3
39	63	Colorectum	Myxoedema	Surgery + chemotherapy	Nodule/edema	>27
40	36	Colorectum	Adenocarcinoma	Palliative	Ulcerated nodule/edema	16

NF: not been found; NHL: non-Hodgkin lymphoma; SCC: squamous cell carcinoma; RCC: renal cell carcinoma; TCC: transitional cell carcinoma

Supplementary Table 1b: Report citations

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*Report in Chinese language