A Case Of Scrotal Cancer With Inguinal Lymph Node Metastasis Treated By Multidisciplinary Modalities: A Case Report

G Chatora, T Rourke, N Sezhian, G Suresh

Citation

G Chatora, T Rourke, N Sezhian, G Suresh. *A Case Of Scrotal Cancer With Inguinal Lymph Node Metastasis Treated By Multidisciplinary Modalities: A Case Report*. The Internet Journal of Urology. 2006 Volume 4 Number 2.

Abstract

In contrast to squamous cell carcinoma of the penis, scrotal carcinoma has historically been a disease of chimney sweeps, associated with exposure to environmental or industrial carcinogens and has only rarely been correlated with human papillomavirus. [1] We report on a former construction worker with squamous cell carcinoma of the scrotum who presented with associated extensive genital warts, suggesting a causal role of human papillomavirus in the development of squamous cell carcinoma of the scrotum. Other notable features in this case included fungating inguinal lymph node metastasis and successful treated by multidisciplinary modalities including staged surgical excision and radiotherapy. The patient was disease free at 28 months.

CASE HISTORY

A 58 year old non diabetic former construction worker had initial referral to Urology clinic by Genito-Urinary clinic in October 2000 after the patient reportedly presented with peno-scrotal genital warts and scrotal ulcerative lesions thought to appear suspicious. Also noted were palpable, painless right inguinal lymph nodes. Patient reportedly stated that the scrotal lesions had been present for 5 years or more.

Two Urology clinic appointments were made for the patient in October 2000 and January 2001, the patient did not attend either.

G.P reviewed the patient in August 2002 as scrotal lesions were infected. The scrotal ulceration was noted to be painless and at that point covering most of the right scrotum. Urgent referral made to Urology OPD and patient encouraged to attend.

The patient was then seen in Urology clinic in September 2002. Examination revealed a healthy well nourished patient with normal vital signs and no bowel or bladder complaints. Of note was a 25cm size scrotal ulcerative lesion, that was, fungating and foul smelling with everted edges, mainly overlying the right but extending to the left hemiscrotum. Large warts were again noted over peno-scrotal area. Also of note was presence of palpable left groin disease and fungating disease in the right groin. Prostate was clinically normal. All other systems were clinically normal. Blood tests including renal function and liver function were normal. Full blood count was normal except for an elevated White cell count of 13.6 x 10^9/l and neutrophilia.

Figure 1

Figure 1: Picture of scrotal ulcer showing everted edges, peno-scrotal warts

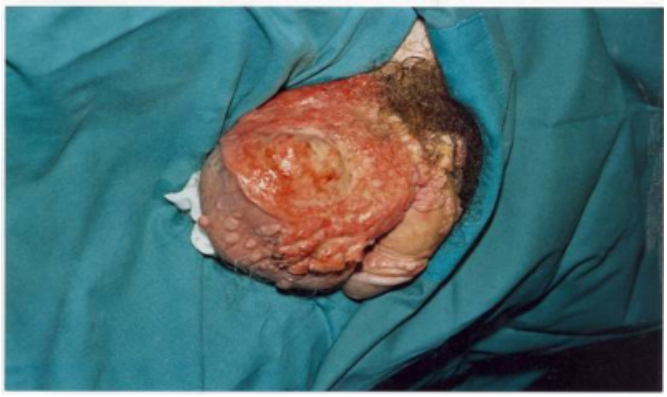
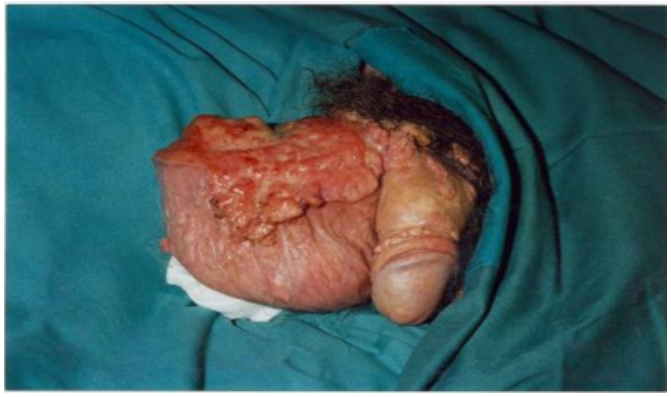


Figure 2



Incisional biopsy of the scrotal lesion edge was done, and the histopathology result showed moderately differentiated infiltrating squamous cell carcinoma with focal keratinisation. For staging, Computed tomographic (CT) images of the abdomen, chest and pelvis were obtained and were reported to show bilateral inguinal lymphadenopathy, more prominent on the right. Some of the nodes had low density centres with peripheral enhancement consistent with the clinical diagnosis of squamous metastases. No lymphadenopathy was present in the abdomen or pelvis and the viscera were normal. Bones were also reported to be normal.

The patient was prepared for surgery, and surgical treatment was divided into two stages. Initial surgical procedures were performed in November 2002. These included a wide local excision, with excision of the scrotal carcinoma with Right Orchidectomy. A Right Inguinal Lymph node biopsy was also done from the matted mass of fungating right groin disease. Intra-operatively the right groin disease was noted to have an area of fluctuance in its lower part. Upon making the surgical incision, 20-30 ml of necrotic fluid drained out, and the tissue was found to be very friable. After excising part of a lymph node, the wound was packed with kaltostat.

Histopathology of the scrotal skin tumour and right testicle showed well differentiated squamous carcinoma with keratinisation and infiltration of testicular tissue. The patient's recovery was slightly complicated by the development of infection of the groin wound, (from which inguinal node biopsy was taken). This was successfully treated on an outpatient basis with regular dressings and oral antibiotics.

Figure 3

Figure 2: Scrotal ulcer histology (perineural invasion)

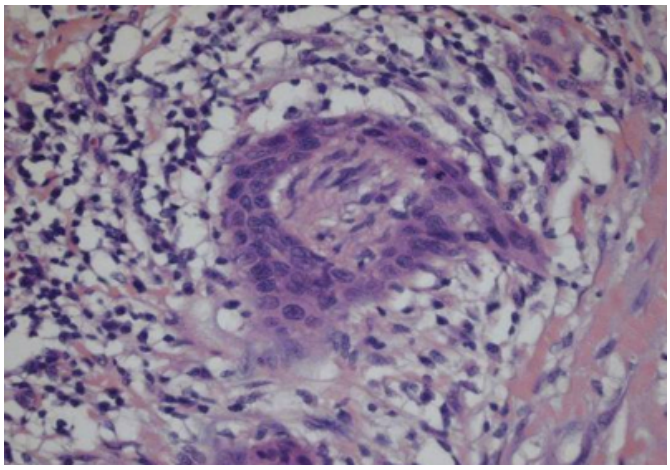
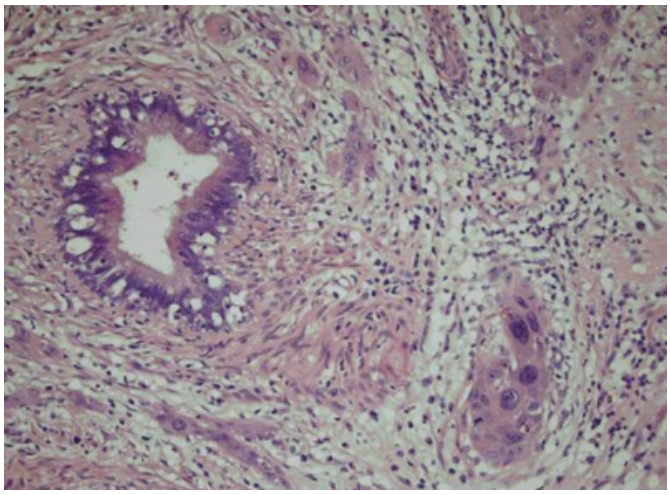


Figure 4

Figure 3: Epididymis histology



In a second procedure six weeks later, the patient had left inguinal node dissection and extended right inguinal node dissection with skin extension and tensor fascia lata flap. Histology revealed three involved lymph nodes in the left groin, and histology of the excised fungating right inguinal region disease showed apparent complete excision but only 1mm clearance at the deep margin.

The case was discussed at the departmental multi-disciplinary team meeting where the decision was made to treat the patient with post-operative radiotherapy, administered through the fascia lata flap due to the close excision margin. A course of radiotherapy was administered, 35Gy in 10 fractions, and completed in August 2003, after which patient suffered minimal side effects.

At the time of last clinic review, 28 months after completing

radiotherapy, clinical examination showed no signs of local recurrence. A CT scan done showed no evidence of nodal or visceral recurrence.

DISCUSSION

Squamous cell carcinoma of the scrotum is rare, and its association with human papillomavirus and genital warts is even more rare.

Scrotal carcinoma has historically been associated with exposure to environmental or industrial carcinogens and, in contrast to squamous cell carcinoma of the penis or anus, has only rarely been correlated with human papillomavirus. There are only a few determined aetiological factors for scrotal carcinoma. Of note is the anecdotal description of soot-related cancer of the scrotum. [2]

Sir Percivall Pott in 1775 noted a high incidence of squamous cell carcinoma of the scrotum in chimney sweepers. Since then other occupations have been associated with an increased incidence of scrotal carcinoma including paraffin or shale oil workers, mule (cotton) spinners, machine operators in engineering, petroleum wax pressman, workers in the screw-making industry, and automatic lathe operators. Squamous cell carcinoma (SCC) of the scrotum was thus one of the first cancers directly linked with a specific occupation. Burmer et al. documented an association between scrotal carcinoma and Human Papilloma Virus (HPV) type 18, [3] while areas of dysplasia were associated with either HPV type 18, 16, or 6/11.

Other factors related to scrotal SCC are social class, with labourers being at a higher risk, race (white men > black men), and variations in hygiene. Today, squamous cell carcinoma is a very uncommon neoplasm. However, new potential etiologies have emerged. PUVA { psoralen (P) and long-wave ultraviolet radiation (UVA)}, used to treat psoriasis, has recently been shown to increase the incidence of both penile and scrotal malignancies.[4] The risk of squamous cell carcinoma of the genitalia is 5-15 times that of other parts of the body.

HPV is part of the papovavirus class, which includes SV 40, BK, and JC virus. Genital warts are clinically apparent HPV infections, thus many more people are infected with the virus than have warts. Although anogenital warts generally are benign, their significance is drawn from the increased risk of malignancy secondary to HPV infection. Specifically, HPV types 16, 18, 31, 33, and 51 are associated with the greatest prevalence of anogenital malignancy. [5] The HPV capsid lacks an envelope, which makes it very stable and resistant to various treatments.

It is more likely that scrotal squamous cell carcinoma in our case was at least partially related to the oncogenic human papillomavirus. This is mainly because the patient did not have any of the any history to link with the main/accepted risk factors for scrotal carcinoma. Human papillomaviruses, particularly types 16 and 18, have also been strongly linked with the development of anogenital squamous cell carcinoma.

Human papillomaviruses are the most common causes of sexually transmitted viral infections in the United States and from 1966 to 1984 the incidence increased 4.5-fold. It is unknown if this increase will have any effect on the incidence and prevalence of scrotal cancer in the future.

Men with scrotal SCC usually present during the 5th to 6th decade of life. Clinical presentation of scrotal carcinoma is usually not of a subtle lesion as the patients often do not seek medical care for several months because of embarrassment. Scrotal SCC most frequently presents as a solitary lesion. The early lesion is a slowly growing pimple, wart, or nodule on the anterolateral aspect of the scrotum, and excluding occupational exposure, there appears to be no predilection for a side. [6] This lesion persists for approximately 6 months before ulcerating. Most patients have the initial lesion for 8-12 months before seeking medical assistance and diagnosis. As in this case, a common reason for presentation is bacterial superinfection or induration which in itself may result from attempts to self treat with home remedies.

Invasion of the scrotal contents or of the penis has been observed in patients with advanced lesions. At the time of presentation, 40-50% of patients have ipsilateral inguinal adenopathy, and approximately half of these men will have metastases in the surgical specimens. Multiple tumours are found in as many as 25% of cases. [6]

In looking at the differential diagnosis for suspected scrotal carcinoma, one must consider that the clinical history and physical findings for many scrotal pathologies are similar. Scrotal ultrasound is the imaging method of choice for evaluating of scrotal disease and in most cases can confirm the presumptive clinical diagnosis and provides relevant additional information. Ultrasound is however not very specific and in a few cases a combination of clinical and

ultrasound findings is inconclusive, thus additional information is necessary to reach a definitive diagnosis. The emergence of MRI as a powerful tool in imaging of the scrotum has been a result of it being accurate in the diagnosis of different scrotal diseases and staging of squamous cell carcinoma of the scrotum. [7, 8]

The staging system for scrotal carcinoma is as follows:

Stage A1 Localized to scrotal wall
Stage A2 Locally extensive tumour invading adjacent structures (testis, spermatic cord, penis, pubis, and perineum)
Stage B Metastatic disease involving inguinal lymph nodes only
Stage C Metastatic disease involving pelvic lymph nodes without evidence of distant spread
Stage D Metastatic disease beyond the pelvic lymph nodes involving distant organs.

Patients with squamous cell carcinoma of the scrotum typically have a poor survival in spite of surgical intervention, possibly because most patients present at 8-12 months when involvement of lymph nodes and distant metastases has occurred. Patients with Stage A1 disease have approximately a 75% or better chance for long- term survival. [9] However, for patients with stage C or stage D disease, the long-term prognosis is poor. [10]

The treatment of choice for primary scrotal SCC is wide local excision with a 2 cm margin with resection of the skin and underlying dartos muscle in the region. Sentinel node biopsy and ilioinguinal or inguinal lymphadenectomy are also recommended in patients with suspected lymph node metastases. [6]

For low stage lesions, laser therapy has been used to treat the local lesion with the possible advantage of a better cosmetic result. Small and medium sized tumours can be excised and the scrotal wall approximated without difficulty. However, large cancers require other measures, where wide local excision may leave huge defects amounting to a hemiscrotectomy and the testes on the affected side may either have to be sacrificed, or translocated to the contralateral hemiscrotum, facilitating both closure of surgical wound and preservation of testes.[11] Other options include placing the testes subcutaneously in the thigh or femoral region, using local thigh flaps to close the defect, or using a split-thickness skin graft to cover the scrotum.[12]

Local recurrence, most often adjacent to or around the area of the previously excised lesion, secondary to new foci of carcinoma or residual carcinoma is seen in 20-40% of patients. [6]

The neo-adjuvant therapy (both chemo- and radiotherapy) has also been recommended to downstage (reduction in the tumour size and lymph node status thus improving the stage of the disease) a very large lesion in order to achieve R0 resection [13, 14]. Adjuvant radiotherapy and combination chemotherapy in the form of four courses of (Methotrexate, Bleomycin and Cisplatinum) is also recommended to achieve a better disease free survival [10].Radiation therapy is also used as a last resort for non-resectable residual or recurrent disease, although without significant effect. [6]

Thus squamous cell carcinoma of the scrotum is a rare condition that often presents late and is best treated by multi-disciplinary modalities including surgical excision and radiotherapy.

ACKNOWLEDGEMENT

Acknowledgements should go to Dr Helen Ainsworth for assistance with analysis of histology slides.

References

1. Orihuela E, Tyring SK, Pow-Sang M, Dozier S, Cirelli R, Arany I, Rady P, Sanchez R: Development of human papillomavirus type 16 associated squamous cell carcinoma of the scrotum in a patient with Darier's disease treated with systemic isotretinoin: J Urol. 1995 Jun;153(6):1940-3
2. Gerber C, von Hochstetter AR, Schuler G, Hofmann V, Rosenthal C: Penis carcinoma in a young chimney sweep. Case report 200 years following the description of the first occupational disease: Schweiz Med Wochenschr. 1995 Jun 17;125(24):1201-5
3. Burmer GC, True LD, and JN Krieger: Squamous Cell Carcinoma of the Scrotum Associated With Human Papillomaviruses: Journal of Urology. 1993; 147: 374-377
4. Stern RS, and R Lang: Non-melanoma Skin Cancer Occurring In Patients Treated With PUVA Five To Ten Years After First Treatment: Journal of Investigative Dermatology. 1988; 91(2):120-4.
5. Chuang T, Brashear R: Warts, Genital: eMedicine Specialties: August 10, 2005.
6. Jingbo Zhang, Manmeen Kaur: Genitourinary Case Report 11: New York University School of Medicine Department of Radiology. March 22, 2004
7. Oyen R, Verellen S, Drochmans A, Baert L, Marchal G, Moerman P, Baert AL: Value of MRI in the diagnosis and staging of testicular tumours: J Belge Radiol. 1993 Mar; 76(2):84-9.
8. Muglia V, Tucci S Jr, Elias J Jr, Trad CS, Bilbey J, Cooperberg PL.. Magnetic Resonance Imaging of Scrotal Diseases: When It Makes The Difference. Adult Urology. 2002; 59: 419-423.
9. Lowe F.C: Squamous-Cell Carcinoma of the Scrotum: Urologic Clinics of North America. 1992; 19(2): 397-405

10. Arai Y, Kinouchi T, Kuroda M, Usami M, Kotake T: A case of scrotal cancer with inguinal lymph node metastasis treated by multidisciplinary modalities including chemotherapy with methotrexate, bleomycin and cisplatin: Hinyokika Kiyo. 1997 Sep;43(9):683-5.
11. Arango O, Bielsa O, Lorente JA, De Leon E, Mas AG: Hemiscrotectomy with contralateral testicular translocation for scrotalr cancer: J Urol. 2002 4 1406-7
12. Friedman J, Dinh T, Potochny J: Reconstruction of the perineum.: Seminars in Surgical Oncology. 2000 Dec: 19; 282-293
13. Friedman R, Hanson S, Goldberg LH: Squamous cell carcinoma arising in a Leishmania scar: Dermatol Sur. 2003, 29:1148-9.
14. Harder Y, Erni D, Banic A: Squamous cell carcinoma of the penile skin in a neovagina 20 years after male-to-female reassignment: Br J Plast Surg. 2002, 55:449-51
15. Taniguchi S, Furukawa M, et al. Squamous Cell Carcinoma of the Scrotum. Dermatology. 1996; 193: 253-254.

Author Information

G. T. Chatora, BMBS SHO General Surgery
Department of Urology, James Paget Healthcare NHS Trust

T. Rourke, BMBS SHO General Surgery
Department of Urology, James Paget Healthcare NHS Trust

N. Sezhian, FRCS Locum
Consultant Urologist, Department of Urology, James Paget Healthcare NHS Trust

G. Suresh, FRCS
Consultant Urologist, Department of Urology, James Paget Healthcare NHS Trust