CASE REPORT

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ROLE OF RADIOTHERAPY IN THE TREATMENT OF LOCALLY ADVANCED PENILE CANCER

MIRELA ŠAMBIĆ PENC[1,2], LUKA PERIĆ[1,2], IVANA CANJKO[1], MAJA KOVAČ BARIĆ[1], DARKO KOTROMANOVIĆ[1,2], NORA PUŠELJIĆ[2,3] and JOSIPA FLAM[1,2]

[1]Department of Oncology, University Hospital Center Osijek, Osijek, Croatia;
[2]Faculty of Medicine, University of J.J. Strossmayer Osijek, Osijek, Croatia;
[3]Emergency medicine, University Hospital Center Osijek, Osijek, Croatia

Summary

Penile cancer is a rare but aggressive tumor, most commonly squamous cell carcinoma. Treatment modalities depend on the stage of the disease, but the backbone of treatment is surgical resection of the primary tumor and regional lymph nodes with the use of neoadjuvant/adjuvant chemotherapy and radiotherapy.

Our case report is about a 59-year-old patient which was presented with bilateral inguinal lymphadenitis, scrotal and penile edema. A biopsy of the change in the penis confirmed squamous cell carcinoma. Partial amputation of the penis and an excisional biopsy of the inguinal lymph nodes was performed, which confirmed the metastasis to the lymph nodes.

Diagnostic imaging revealed bilateral enlarged inguinal lymph nodes which were later surgically removed. Postoperative CT scan showed three suspected lung metastases. The patient was then treated with polychemotherapy. Follow-up CT scan showed complete regression of metastatic changes in the lungs but also showed local recurrence in the area of the penile root. Radiotherapy with concomitant administration of cisplatin was conducted.

Penile cancer is an aggressive disease that can be cured at an early stage if adequate treatment is applied. We highlight the importance of a multimodal and multidisciplinary approach consisting of polychemotherapy, surgical treatment, and radiotherapy.

KEYWORDS: *penile neoplasms, radiotherapy, systemic chemotherapy, neoadjuvant therapy*

INTRODUCTION

Penile cancer is a rare but aggressive tumor that most commonly occurs between the ages of 50-70 years. The most common is squamous cell carcinoma that develops on the epithelium of the inner foreskin and glans(1). Early diagnosis is of great importance because 5- year survival is about 50% (> 85% in patients with negative lymph nodes and 29% - 40% in patients with positive lymph nodes and 0% in patients with affected pelvic lymph nodes)(2, 3). Treatment modalities depend on the stage of the disease, but the backbone of treatment is surgical resection of the primary tumor and regional lymph nodes with the use of neoadjuvant/adjuvant chemotherapy and radiotherapy(3-5).

***Corresponding author**: Mirela Šambić Penc, Department of Oncology, University Hospital Center Osijek, J. Huttlera 4, 31000 Osijek, Croatia. E-mail address: mirela.penc@gmail.com*

CASE REPORT

A 59-year-old patient was examined in May 2020 by a urologist for bilateral inguinal lymphadenitis, scrotal and penile edema. Clinical examination in the right groin showed a tumor mass with the size of 5 x 10 cm. A biopsy of the change in the

penis confirmed squamous cell carcinoma and cytological puncture of the lymph nodes revealed elements of granulomatous inflammation. In July 2020, a partial amputation of the penis and an excisional biopsy of the inguinal lymph nodes was performed, which confirmed the metastasis to the lymph nodes.

Diagnostic imaging revealed bilateral enlarged inguinal lymph nodes. The right diameter of the lymph node conglomerate was 64 mm and the left diameter was 38 mm. A bilateral inguinal lymphadenectomy was performed. Pathohistological findings confirmed metastatically altered lymph node conglomerates up to 5 cm in size on both sides.

A follow-up postoperative CT scan of the thorax, abdomen, and pelvis showed three suspected lung metastases up to 10 mm in size and multiplied and enlarged para aortocaval lymph nodes up to 20 mm in size. The patient was in good general condition but complaining about swelling of both lower extremities. In August 2020, treatment with polychemotherapy according to the TIP protocol (paclitaxel, ifosfamide, cisplatin) was started. In October 2020, the last (IV) cycle of systemic chemotherapy was applied, which was well tolerated by the patient. Follow-up CT scan of the thorax, abdomen, and pelvis showed complete regression of metastatic changes in the lungs as well as in para aortocaval lymph nodes but showed local recurrence in the area of the root of the penis and enlarged inguinal lymph nodes bilaterally. Cytology confirmed squamous cell carcinoma. In December 2020, radiotherapy was started with concomitant administration of cisplatin. The patient received a total TD of 50 Gy in 25 fractions on the pelvic lymph nodes with a boost of 16 Gy in 8 fractions on the primary tumor and inguinal lymph nodes on both sides. The patient was referred for a control CT scan of the thorax, abdomen, and pelvis.

DISCUSSION

Penile cancer is a rare disease but tends to spread rapidly. The tumor usually develops on the inner foreskin or the glans and becomes larger. Eventually, lymph nodes in the groin or pelvis are involved(2).

With this case report, we want to highlight that there is also a different treatment modality option than approaching the surgery first. We want to show that if importance is given to a multidisciplinary team, their approach to this rare but aggressive tumor would look different. Patient described in this case report had positive bilateral inguinal lymph nodes; therefore, according to NCCN guidelines and UpToDate guidelines, neoadjuvant chemotherapy should be approached as a treatment option(3,5-7).

Also, we want to emphasize that in one study neoadjuvant chemotherapy according to the TIP protocol gave a better chance to perform radical resection of the primary tumor and regional lymph nodes in patients that responded to this protocol. Patients' overall survival and progression-free survival were significantly higher for patients diagnosed with stage N3 penile cancer who underwent radical resection upon response to neoadjuvant chemotherapy compared to patients with no response to chemotherapy in whom no radical resection could be performed(8).

Since follow up postoperative CT scan of the thorax, abdomen, and pelvis showed three suspected lung metastases up to 10 mm in size and multiplied and enlarged para aortocaval lymph nodes up to 20 mm in size, in August 2020 treatment with polychemotherapy according to the TIP protocol (paclitaxel, ifosfamide, cisplatin) was started.

We opted for PKT according to the TIP protocol based on the results of a phase II study which showed that 50% of patients had a response to therapy and a longer time to disease progression and longer overall survival than the control group(7,9).

A retrospective analysis from the national cancer database did not show a statistically significant difference in any outcome between patients who received chemotherapy alone or in combination with chemoradiation . However this analysis is limited by a small sample size . Experts in the field acknowledge the presence of an ongoing debate about the use of postoperative radiotherapy in lymph node positive patients(10).

Also, one study suggests that patients with penile cancer with displayed extracapsular nodal extension after inguinal surgery that received adjuvant radiotherapy plus chemotherapy had improved cancer-specific survival than the patients that received only chemotherapy(11).

CONCLUSION

Penile cancer is an aggressive disease that can be cured at an early stage if adequate treatment is applied, but its prognosis largely depends on the involvement of the inguinal lymph nodes. In conclusion, this case report shows the importance of multimodal and multidisciplinary approach to the treatment, consisting of polychemotherapy, surgical treatment, and radiotherapy.

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Sažetak

ULOGA RADIOTERAPIJE U LIJEČENJU LOKALNO UZNAPREDOVALOG KARCINOMA PENISA

M. Šambić Penc, L. Perić, I. Canjko, M. Kovač Barić, D. Kotromanović, N. Pušeljić, J. Flam

Rak penisa rijedak je, ali agresivan tumor, najčešće karcinom pločastih stanica. Načini liječenja ovise o stadiju bolesti, ali okosnica liječenja je kirurška resekcija primarnog tumora i regionalnih limfnih čvorova uz upotrebu neoadjuvantne / adjuvantne kemoterapije i radioterapije.

U našem prikazu slučaja radi se o 59-godišnjeg pacijentu koji se javlja s bilateralnim ingvinalnim limfadenitisom, edemom skrotuma i penisa. Biopsija promjene penisa potvrdila je karcinom pločastih stanica. Izvršena je djelomična amputacija penisa i ekscizijska biopsija ingvinalnih limfnih čvorova, čime su potvrđene presadnice u limfne čvorove.

Dijagnostičkom obradom otkriveni su povećani ingvinalni limfni čvorovi obostrano koji su kasnije kirurški uklonjeni. Postoperativni CT pokazao je tri suspektne presadnice u plućima. Pacijent je zatim liječen polikemoterapijom. CT je nakon provedene polikemoterapije pokazao potpunu regresiju metastatskih promjena u plućima, ali i lokalni recidiv u području korijena penisa. Provedena je radioterapija uz istodobnu primjenu cisplatine.

Rak penisa agresivna je bolest koja se može izliječiti u ranoj fazi primjenom odgovarajuće terapije. Želimo ovim putem naglasiti važnost multimodalnog i multidisciplinarnog pristupa koji se sastoji od polikemoterapije, kirurškog liječenja i radioterapije.

KLJUČNE RIJEČI: *rak penisa, radioterapija, sistemska kemoterapija, neoadjuvantna terapija*