CASE REPORT
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Interstitial brachytherapy with ^{192}Ir in vulvar cancer

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ABSTRACT

Vulvar cancer accounts for 5% of all female genital cancers and 1% of all malignancies in women. A female patient, 78 years old, with diagnosed squamous cell carcinoma of vulva stage II, was admitted to our Institution in January 2004. An exophytic tumor, size 6 x 3.5 cm which infiltrated subcutis in the area of the upper two-thirds of labia majora dexter was found during gynecological examination. Inguinal nodes were negative. Our choice was to perform interstitial brachytherapy. During the control checkup in September 2005 no tumor was observed and its previous location was transformed in fibrous tissue with shallow post-irradiative crater.

KEY WORDS: *Vulvar Neoplasms; Carcinoma, Squamous Cell; Brachytherapy; Iridium Radioisotopes; Radiotherapy Dosage*

INTRODUCTION

Invasive vulvar carcinoma is a rare disease that accounts for approximately 4% of gynecologic cancers (1). It is predominantly a disease of postmenopausal women, the age specific incidence increasing with increasing age. Predisposing conditions probably include obesity, hypertension, and diabetes. The most important epidemiologic factors that have been associated with the development of vulvar cancer include granulomatous infection, herpes simplex virus, and human papillomavirus. The human papillomavirus has been identified in invasive carcinomas and preinvasive lesions of the vulva (2).

Ninety percent of cancers are squamous in origin, while melanomas, adenocarcinomas, basal cell carcinomas, verrucous carcinomas, sarcomas, and other rare malignancies also occur.

Approximately 70% of vulvar squamous carcinomas involve the labia majora or minora, most frequently the labia majora. Fifteen percent to 20% involves the clitoris, and a similar proportion involves or arises in the perineum. In approximately 10% of cases, the lesion is too extensive to permit determination of the original site, and in approximately 5% of cases, the lesion is multifocal (3). Vulvar tumors may extend locally to invade adjacent structures, including the vagina, urethra, and anus. An advanced vulvar tumors may invade adjacent pelvic bones.

Together, VIN III (vulvar intraepithelial neoplasia) and invasive squamos carcinoma make up 90%-95% of malignant lesions of the vulva (4). The most common sign of vulvar cancer at diagnosis is a mass and the most common symptom is pruritus. Other common signs and symptoms include pain, bleeding, dysuria, and ulceration.

CASE REPORT

A 78 years old patient with histopathological verified carcinoma of the vulva (squamous cell carcinoma) stage II was examined by Commission for gynecological tumours of our Institute. Cardiovascular disorder with significant bilateral varicosity of legs was among the contraindications for surgery intervention. The first checkup was in January 2004 showed a visible tumefaction in external genitalia and intensive pruritus. An exophytic tumor, size 6 x 3.5 cm, which infiltrated subcutis in the area of the upper two-thirds of labia majora dexter was seen by gynecological examination. There were not found positive inguinal lymph nodes. Vagina was exposed with a visible prolapse of posterior wall and epithelization of cervix uteri.

An interstitial brachytherapy was performed. An afterloading technique was used with Iridium-192. Four semi-flexible applicators were applied through the tumor (Figure 1). The number of implanted sources varied from five to nine. The applied dosage in ROI was in four fractions each of 820 cGy (equivalent to the dosage of 50 Gy in 25 fractions) at the time interval of 6 hours. After two months on a control examination a prominent tumor regression was observed (more than two-thirds) (Figure 2).

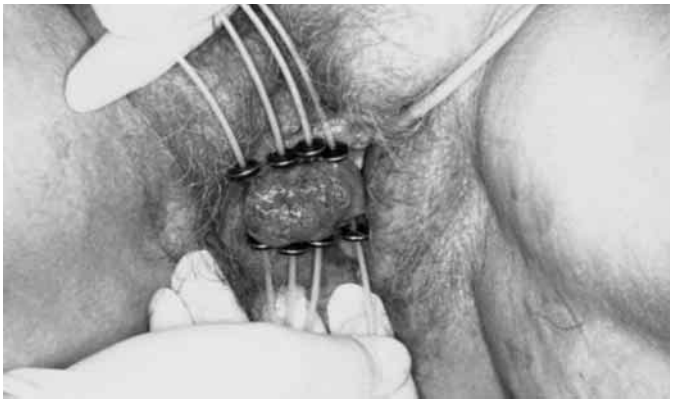

Figure 1. Non-template technique is used the tubes are fixed and marked on both sides with buttons

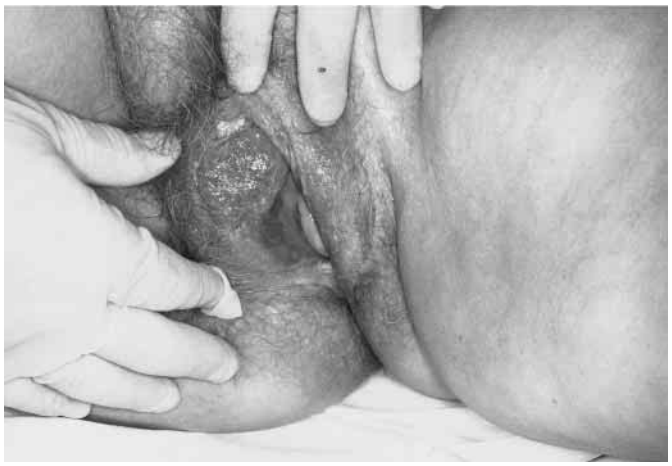

Figure 2. After a two months control examination a prominent tumor regression

An addition application was applied in form of three rigid applicators implemented through the remnant tumor with a dosage of 700 cGy in two fractions (equivalent to 20 Gy in 10 fractions). The range of total dose was 70 Gy to ROI.

During the control checkup in September 2005 no tumor was observed and its previous location was transformed in fibrous tissue with shallow post-irradiative crater (Figure 3).

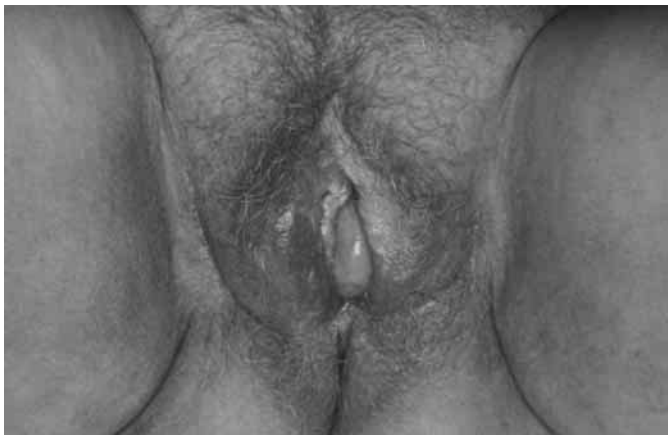

Figure 3. Last control on September 2005 no tumor was observed

DISCUSSION

Vulvar cancer is a visible and palpable disease and, therefore, should be diagnosed in earlier stages. An interesting result was reported by the Gynecologic Oncology Group which demonstrated that approximately 39% of patients with vulvar cancer are diagnosed with advanced stages (stage III or stage IV). A biopsy should be taken at the center of the lesion, not at its leading edge (5,6).

Radical vulvectomy with different modalities has been the primary treatment of vulvar cancer (6). Radiotherapy (RT) also has an important role in the treatment of vulvar cancer as primary or adjuvant treatment, or as a combined therapy modality with surgery or chemotherapy (6-9). Patient who refuse or who are not candidates for surgical treatment represent difficult therapeutic challenges. Successful primary treatment with RT has been reported, particularly in earlier stage patients (10,11). Pohar and Hoffman have emphasized the importance of interstitial brachytherapy (11,12).

In general, irradiation encompasses the vulvar area, the inguinal femoral nodes, and, in some patients, the pelvic lymph nodes, while minimizing the dose to the femoral heads.

In the occasional medically inoperable patient, small superficial lesions may be controlled with 60 to 65 Gy. For larger tumors, the primary lesion should be irradiated with reduced fields to a dose of approximately 70 Gy.

Usually parallel opposed anterior and posterior portals are used, preferentially loaded anteriorly (or a high-energy photon single anterior beam with bolus is used) to cover the vulva and the regional lymphatics and deliver 45 to 50 Gy to an appropriate depth. After a dose of 45 to 50 Gy is delivered to the vulvar area, a 6- to 9-MeV electron beam or low-energy photon beam (4 to 6 MV) aimed directly at the vulva is used to deliver an additional 10 to 20 Gy to gross or microscopic tumor volumes. An interstitial implant may also be considered to deliver the boost dose to the primary tumor. If the resection margins are microscopically involved or if there is gross residual tumor, an additional dose of 15 to 20 Gy should be administered with reduced portals or an interstitial implant. Koh et al. incorporated concurrent chemotherapy into the RT regimen for locally advanced vulvar carcinoma finding a 50% complete response rate (13,14).

CONCLUSION

Interstitial implants with Microselectron - HDR can provide an adequate (homogeneous) dose distribution to vulvar carcinoma. An interstitial implant may also be considered to deliver the boost dose to the primary tumor and in the reduction of mutilating surgery for vulva cancer.

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