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Case Report

A Rare Case of Basaloid Squamous Cell Carcinoma in the Genital Region

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ABSTRACT

Vulvar carcinoma accounts for approximately 0,7% of all malignancies in females and 4% of cases of malignancies in the female reproductive organs. Basaloid squamous cell carcinoma (BSCC) is an uncommon squamous cell carcinoma (SCC) variant with aggressive biological features and frequent distant metastasis. BSCC is reported to occur in approximately 2% of cases in the head and neck region, such as the oral cavity, larynx, and hypopharynx, but can also be found in the nasopharynx and trachea. BSCC is rarely found in the female genital tract, only 6 cases of BSCC cancer in the genital tract have been reported. The detection of vulvar cancer often takes longer than necessary for several reasons. Firstly, the condition can be asymptomatic for a prolonged duration. Moreover, there is a lack of awareness among women about the disease and its signs, which further delays the diagnosis. This postponement in diagnosis results in a worse prognosis and fewer options for medical treatment, ultimately impacting women's psychosexual and psychosocial. We present the case of a 62-year-old woman who attended the obstetrics clinic of Dr. Sardjito Hospital with multiple blackish masses on the vulva extending to the gluteal region and also lymphadenopathy in the inguinal lymph nodes. A wide excision vulvectomy was performed, and the specimen was sent to the Anatomical Pathology Laboratory.

INTRODUCTION

Cancer is one of the causes of death in Indonesia[1]. Over the past five years a long time, 9.6 million people have died from cancer[2]. Baseline Health Research (BHR) data showed that Indonesia's cancer prevalence increased by 0,1% over five years[2]. Cancer prevalence is generally high in Yogyakarta compared to other areas, going from 4.1% in 2013 to 4.86% in 2018[3]. Vulvar cancer accounts for approximately 4% of malignancies of the female reproductive organs[4]. The most common subtype is squamous cell carcinoma (SCC), in 90% of cases. The subtypes of SCC

based on WHO Classification include basaloid, verrucous, spindle cell, acantholytic, clear cell, SCC with sarcomatoid differentiation, and lymphoepithelioma[5,6].

Basaloid squamous cell carcinoma is a rare subtype. It usually presents in the postmenopausal, around the 6th-7th decade. It can occur anywhere in the body, including the vulva, vagina and cervix[7]. Clinical features may present as ulcerated, leukoplakic, fleshy, or warty masses. Other symptoms include vulvar bleeding, dysuria, discharge, and pain. The presence of two components characterizes the histopathological picture. The first component is squamous cell differentiation and the basaloid component. The squamous component is arranged in sheets with keratin pearls and intercellular bridges, and the basaloid component is placed in islands, giving a jigsaw puzzle pattern with a perinuclear cleft[9].

Basaloid squamous cell carcinoma of the vulva is a rare entity with only a few cases reported in the medical literature. This case report aims to describe the clinical presentation, histopathological features, and diagnostic challenges of this rare disease.

CASE PRESENTATION

A 62-year-old woman was referred to the gynecologic and obstetrics clinic of Dr. Sardjito Hospital with multiple lumps in the vulva and gluteus for 3 months. The lumps were pruritic and painless, and no complaints of bowel movement or urination. The patient was a referral from other hospitals with the diagnosis of nevoid melanoma. The vital sign were obtained: blood pressure, 136/83 mmHg, pulse, 82 beats/min, respiratory rate, 20 breaths/min, and temperature 36,5^{o}C. Physical examination of the genital area revealed a lumpy vulva with a largest size 3cm x 2cm, blackish (Figure 1). On radiological examination, there were no pulmonary or bone metastases. The mass was excised from the vulva, gluteal region, and inguinal lymph nodes. The surgical specimens were put in formalin and sent to the pathology laboratory.

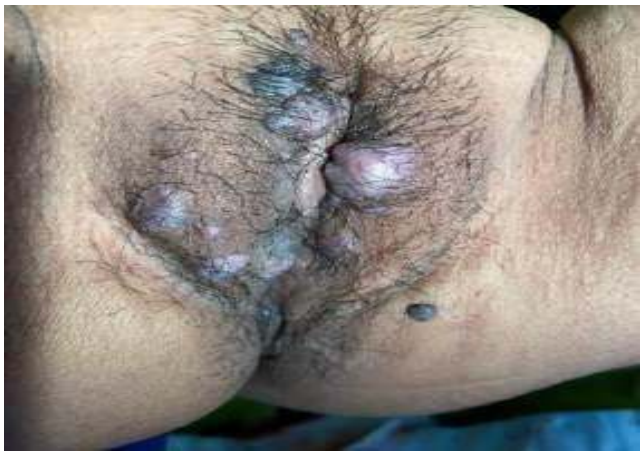

***Figure 1**. Clinical presentation of the case showing multiple mass on vulva extending to gluteus region*

The specimen on gross examination showed the largest mass measured 3.7 x 2.1 cm, skin thickness of 0.3 cm, and the smallest measured 1 x 0.5 cm, skin thickness of 0.3 cm. Multiple hypopigmented nodules with a diameter of 0.5 - 1.5 cm were found on the skin surface. In the cross section, it is brownish-white, partly yellow (Figure 2, A and B).

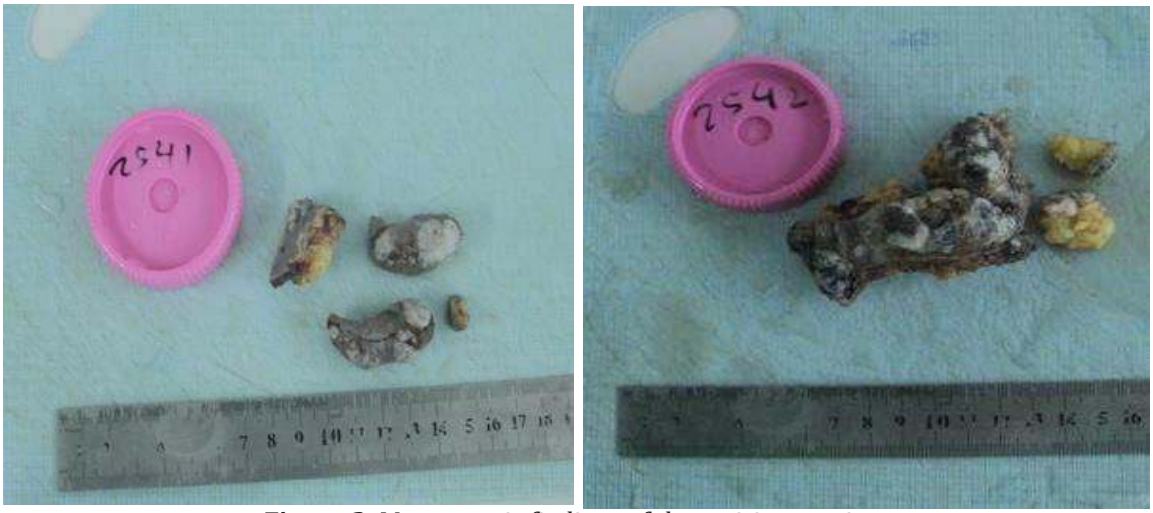

Figure 2. *Macroscopic findings of the excision specimen*

Histopathological examination showed tumors arranged in nests, some with central comedo necrosis. Peripheral clear artifacts were found around the tumor nests. Tumor cells are polymorphic, large in size with scanty cytoplasm. Nuclei are round, and oval, with irregular membranes, coarse chromatin, and prominent nucleoli. Mitosis are frequent. Tumor invasion of lymphatic vessels has been found (Figure 3).

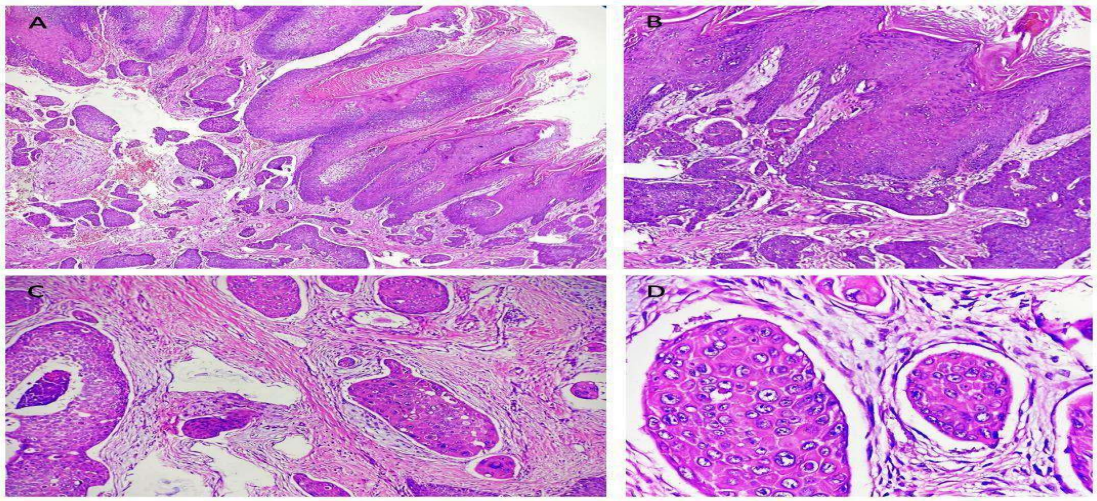

Figure 3. *(A, B) Photomicrograph showing tumor cell arranged in the nest, infiltrating into the underlying stroma (H&E, 4x). (C, D) Photomicrograph showing tumor cells are polymorphic with scanty cytoplasm. Some foci of comedo necrosis*

DISCUSSION

In general, the most common skin cancers in the vulvar area are squamous cell carcinoma (SCC)[10]. Risk factors associated with the pathogenesis of vulvar SCC include age over 50 years, HPV infection, chronic inflammation, sexually transmitted diseases, and low socioeconomic status[11]. In this case, the patient was 62 years old. The main risk factor causing this malignancy is age. Based on literature, females over 50 have significantly higher SCC odds compared to younger women, with menopausal status further increasing susceptibility[12]. Occupational risk factors for the incidence of skin cancer are related to exposure chemicals carcinogenic such as exposure ultraviolet, arsenic, and radiation[13].

The presence of precursor lesions of VIN (vulval intraepithelial neoplasia) can be divided into two broad groups, namely HPV-associated usual type and HPV-independent. The HPV-associated usual type is associated with younger age, less progression to SCC, and is usually associated with smoking. Histopathological features of HPV-associated are usually basaloid/warty SCC subtype. Whereas HPV-independent usually progresses to keratinizing SCC[14].

Human papillomavirus (HPV) infection leads to increased expression of the tumor suppressor p16 in cells. Oncogenic HPV16 is closely associated with BSCC occurring in the oropharyngeal and anogenital regions. There is some evidence that high-risk HPV33 in primary cutaneous BSCC. Both HPV33 and HPV16 belong to the same phylogenetic species and are involved in the malignant transformation of skin vulvar, vaginal, cervical, penile, and anorectal cancers[15]. HPV testing is recommended routinely in patients with squamous cell carcinoma which has a good prognosis because it is sensitive to chemotherapy and radiation[16]. However, this patient was not tested for HPV.

HPV prevalence has decreased among the population who have received HPV vaccination, particularly among women aged 14 to 24 years[16]. HPV vaccination has a significant effect on the prevention of HPV-related cancer[17].

The most common skin tumor can be divided into squamous cell carcinoma, basal cell carcinoma, and melanoma. The differential diagnosis between BSCC and other entities may be challenges because the clinical features are similar. Clinically, SCC can present as erythematous patches, plaques, ulcers, or indistinct masses with itching, pain, and bleeding[18]. The most common site are sunlight exposure area in head and neck regions[18]. In advanced stages, lymphatic spread is common, with the inguinal lymph nodes being the first to be spread[19]. Whereas in this case, the region is in the vulvar and gluteus.

The differential diagnosis of SCC is basal cell carcinoma. BCC is a non-melanotic tumor that originates from the basal cells of the epidermis. BCC of the vulva occurs in less than 1% of cases[20]. Risk factors for BCC include sun exposure (85% on the head and neck), radiation,

immunosuppression, and inherited conditions such as xeroderma pigmentosum[21]. Clinically, vulvar BCC presents with erythematous plaques, pruritus, bleeding, and rarely ulcerated lesions[22]. Several variants of BCC include nodular, micronodular, fibroepithelial, superficial, infiltrative, adnexal differentiation, keratotic, and pigmented. Microscopic features show tumors arranged in lobules of basaloid cells, peripheral palisading nuclei, surrounded by a myxoid stroma. Clefts formation between the tumor and stroma can be seen in nodular BCC. These tumors are slow-growing and rarely metastatic, but this patients the tumor growth rapidly[23].

Another vulvar tumor is melanoma. Melanoma originates from melanocytes. Melanoma occurs in post-menopausal women in the 5th decade of life. The incidence of vulvar melanoma accounting 5%-6% of vulvar carcinoma [24]. Clinical symptoms include pain, pruritus, bleeding, and a blackish vulvar mass. In addition, vulvar melanoma may be seen as papules, macules, and nodules with irregularly colored borders[24]. These clinical features are similar to these patients. Predisposing factors include a history of irradiation, HPV infection, and immunocompromise. Some literature reports that this tumor can spread to regional lymph nodes, lungs, bones, liver, and bone marrow. The lung is the most common site, followed by the liver and brain[25,26].

Histopathological features are the gold standard for differentiating various types of skin tumors. Microscopically, basaloid squamous cell carcinoma reveals tumor cells organized in nests. The tumor cells consist of two components. The first component is squamous differentiation, with cells displaying a polygonal arrangement and eosinophilic cytoplasm. Intercellular bridging is still observed. The second is the basaloid component with scanty cytoplasm[27]. On immunohistochemical examination, p63, CK5/6, and p16 will appear positive but negative for BerEPA4[28]. Basal cell carcinoma arranges islands of basaloid ell with peripheral palisaded in a background of mucinous and artifactual cleft [27]. They are characteristically strongly and diffusely for BerEP4 and AR, while negative for epithelial membrane antigen (EMA)[27]. Melanoma, is a microscopically, loosely cohesive, and small nest of cells. Melanoma cells have enlarged nuclei and large, prominent, eosinophilic nucleoli. The cells can be oval to round to spindle in shape[27]. Melanoma cells are typically positive for S100, SOX10, Melan A, and HMB45[27].

All treatment options depend on specific factors, such as positive resection margins, usual age, reconstructive surgery, and size parameters. Curettage and electrodesiccation, Mohs microsurgery, radiation therapy, superficial therapies, and extensive local excision with postoperative margin assessment (POMA) are all part of the treatment. Re-excision is suggested for margins close to or positive margins. Radiation is still an option, using photons or electrons from an external beam with a bolus to boost the dose to the skin. Brachytherapy has been suggested as a plesiotherapy approach for skin dose accumulation while protecting vulnerable underlying organs. Although some physicians advise a lower dose per fraction for better cosmetic results, outside

radiation is typically administered as an adjuvant in a dosage of 50 Gy in 2.5 to 3.5 Grey per fraction[27].

The diagnosis of BSCC is based on the histopathological features showing tumor cells arranged in infiltrative nests with squamous differentiation, comedo necrosis, and basaloid cells with a perinuclear cleft. The inguinal lymph nodes are also involved. The histopathological diagnosis is essential to differentiate the different subtypes of vulvar carcinoma, as it plays a role in the choice of therapy and prognosis.

CONCLUSION

The conclusion states that basaloid squamous cell carcinoma is a rare vulvar tumor characterized by aggressive behavior and a poor prognosis, with an overall 3-year survival rate of 28.5%. The recommended treatment approach involves a combination of wide excision surgery with negative margins, followed by chemotherapy and/or radiotherapy, which may offer the best chance for successful tumor management. Furthermore, given its rarity, BSCC in the genital region requires increased clinical awareness and further research to establish standardized treatment protocols. A multidisciplinary approach involving gynecologic oncologists, pathologists, and radiologists is crucial to ensure optimal patient care. Future studies with larger case series and molecular analysis may provide deeper insights into the pathogenesis, prognostic factors, and potential targeted therapies for this rare malignancy. Early diagnosis, individualized treatment planning, and close post-treatment surveillance remain key factors in improving disease outcomes and enhancing patients' quality of life.

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