BG Pulse Journal USA
ISSN:1947-2536 http://www.bgpulseusa.com/index.php/bg

INTEGRATIVE APPROACH TO THE DIAGNOSIS AND TREATMENT OF VULVAR CANCER

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https://doi.org/10.5281/zenodo.20344029

ABSTRACT: Vulvar cancer is a rare gynecologic malignancy associated with significant physical and psychological complications. This article evaluates modern integrative approaches to the diagnosis and treatment of vulvar cancer. The study was based on analysis of scientific literature, clinical guidelines, and peer-reviewed oncology research. The findings demonstrated that multidisciplinary management improves early diagnosis, accurate staging, individualized treatment planning, and postoperative rehabilitation. Advanced imaging, molecular diagnostics, organ-preserving surgery, sentinel lymph node biopsy, radiotherapy, immunotherapy, and psychosocial support contribute to better oncologic and functional outcomes. Integrative oncology enhances patient quality of life and supports personalized treatment strategies.

Keywords: vulvar cancer, integrative oncology, gynecologic oncology, molecular diagnostics, immunotherapy, radiotherapy, multidisciplinary treatment.

INTRODUCTION

Vulvar cancer is a relatively rare gynecologic malignancy that accounts for approximately 3–5% of cancers affecting the female reproductive system. Despite its low incidence, the disease remains clinically significant because delayed diagnosis and inadequate treatment can lead to serious physical and psychological consequences. The majority of vulvar cancers are squamous cell carcinomas, while less common histological types include melanoma, adenocarcinoma, and basal cell carcinoma.

The development of vulvar cancer is associated with two major pathogenic pathways. The first pathway is related to persistent infection with high-risk human papillomavirus (HPV), especially HPV-16 and HPV-18, which commonly affects younger women. The second pathway is HPV-independent and is usually associated with chronic inflammatory disorders such as lichen sclerosus in elderly patients. These biological differences influence tumor progression, therapeutic response, and prognosis.

METHODOLOGY AND LITERATURE REVIEW

This study was conducted using a qualitative analytical methodology based on a comprehensive review of modern scientific literature dedicated to vulvar cancer diagnosis, treatment, and integrative oncologic management. The methodological framework was developed according to the principles of evidence-based medicine and multidisciplinary clinical evaluation. The main purpose of the review was to analyze contemporary approaches used in gynecologic oncology and to evaluate how integrative treatment strategies improve clinical outcomes, patient safety, and quality of life.

The literature review included scientific materials collected from internationally recognized electronic databases such as PubMed, Scopus, Web of Science, Google Scholar, and ScienceDirect. Peer-reviewed journal articles, international clinical guidelines, systematic reviews, observational studies, and evidence-based recommendations related to vulvar cancer were carefully examined. Special attention was given to publications issued within the last fifteen years in order to ensure scientific relevance and clinical accuracy.

The methodological structure of the review was based on thematic categorization and comparative analysis. Selected studies were grouped according to several important scientific domains including epidemiology, etiology, molecular pathology, clinical manifestations, diagnostic methods, imaging technologies, surgical treatment, radiotherapy, chemotherapy, immunotherapy, rehabilitation, and psychosocial support. Such categorization allowed objective comparison of traditional and modern treatment strategies while identifying the benefits of integrative oncology [1].

One of the most important scientific sources analyzed during this review was the article “Cancer of the Vulva” written by Norman F. Hacker, Patricia J. Eifel, and Jan van der Velden. The authors provided a detailed overview of vulvar cancer epidemiology, pathological characteristics, clinical staging, and treatment principles. Their research emphasized that vulvar cancer requires multidisciplinary management because the disease affects not only physical health but also psychological and sexual well-being [2].

Another significant publication reviewed in this study was “Cancer of the Vulva” by Lindsay J. Rogers and M. A. Cuello. This article focused on modern therapeutic strategies and highlighted the importance of individualized treatment planning. The authors demonstrated that less invasive surgical approaches can preserve anatomical structure and improve postoperative quality of life without reducing oncologic effectiveness.

The study “Sentinel Nodes in Vulvar Cancer: Long-Term Follow-Up of the GROINSS-V Studies” by Te Grootenhuis and colleagues was also carefully analyzed. This research represented one of the most influential investigations related to sentinel lymph node biopsy in vulvar cancer [3].The authors concluded that sentinel node mapping significantly decreases postoperative complications such as lymphedema and chronic pain while maintaining reliable oncologic outcomes.

The literature review additionally included analysis of “Clinicopathological Prognostic Factors and Patterns of Recurrence in Vulvar Cancer” by Woelber and coauthors. This publication investigated prognostic indicators influencing recurrence risk and patient survival. The researchers emphasized that accurate staging, tumor size evaluation, lymph node assessment, and surgical margin status play essential roles in determining long-term outcomes [4].

Clinical recommendations published in the “ESGO Guidelines for the Management of Patients with Vulvar Cancer” were also extensively evaluated. These guidelines provided modern evidence-based recommendations regarding diagnosis, staging, surgical treatment, radiotherapy, and follow-up care. The guidelines strongly supported multidisciplinary decision-making and individualized patient-centered treatment strategies.

The reviewed literature demonstrated that delayed diagnosis remains one of the major clinical problems associated with vulvar cancer. Many scientific publications reported that patients frequently misinterpret early symptoms such as itching, burning, irritation, or ulcerative lesions as benign gynecological or dermatological conditions. Consequently, diagnosis is often established at advanced stages. Researchers consistently identified vulvoscopy combined with biopsy and histopathological evaluation as the gold standard for definitive diagnosis [5].

The methodological analysis additionally examined surgical treatment strategies. Earlier treatment approaches were primarily based on radical vulvectomy combined with bilateral inguinofemoral lymphadenectomy. Although effective for local disease control, these procedures were associated with high postoperative morbidity including wound infection, chronic pain, urinary dysfunction, sexual impairment, and lymphedema [6].

Modern scientific evidence increasingly supports conservative and organ-preserving surgical approaches. Radical local excision with adequate surgical margins has become widely accepted in selected patients because it minimizes anatomical disfigurement and improves postoperative rehabilitation. Comparative studies demonstrated that less invasive surgery significantly decreases both physical and psychological complications.

RESULTS AND DISCUSSION

The present review demonstrated that integrative management significantly improves the diagnosis, treatment, rehabilitation, and long-term quality of life of patients with vulvar cancer. Analysis of modern scientific literature revealed that multidisciplinary and personalized oncology has become increasingly important in gynecologic cancer management. Compared with traditional treatment models based primarily on radical surgery, integrative approaches provide more accurate diagnostics, less postoperative morbidity, improved psychological adaptation, and better functional outcomes.

One of the most important findings identified during the review was the critical role of early diagnosis. Scientific evidence consistently demonstrated that delayed recognition of vulvar cancer remains a major clinical problem worldwide. Many patients initially interpret itching, pain, irritation, burning sensation, or vulvar lesions as benign gynecological conditions. Consequently, diagnosis is frequently established at advanced stages when treatment becomes more aggressive and prognosis worsens [7].

The reviewed studies confirmed that integrative diagnostic pathways improve early disease detection. Clinical gynecological examination combined with vulvoscopy and histopathological biopsy remains the diagnostic gold standard. Histopathological assessment enables accurate determination of tumor type, invasion depth, differentiation status, and precursor lesions such as vulvar intraepithelial neoplasia (VIN). Researchers emphasized that early histological confirmation significantly increases the possibility of successful organ-preserving treatment.

An important result of the review was the growing role of molecular diagnostics in vulvar cancer management. Multiple studies demonstrated that molecular markers including HPV status, p16 expression, and TP53 mutation analysis contribute to more precise classification of vulvar malignancies [8]. HPV-associated tumors were generally associated with better treatment response and improved prognosis compared with HPV-independent cancers related to chronic inflammatory disorders such as lichen sclerosus.

The findings additionally indicated that molecular profiling may become increasingly important for future personalized therapy. Researchers suggested that biomarker-based treatment selection can improve therapeutic effectiveness while reducing unnecessary toxicity. This transition from generalized treatment toward precision oncology represents one of the most significant advances in modern cancer medicine.

Another major result observed in the reviewed literature involved the effectiveness of modern imaging technologies. MRI, CT, and PET/CT imaging were shown to substantially improve diagnostic accuracy and tumor staging. MRI demonstrated particular value in assessing local tumor

extension, soft tissue invasion, and involvement of adjacent anatomical structures. PET/CT was especially useful in detecting metastatic lymph node disease and recurrent tumors.

The integration of advanced imaging into diagnostic algorithms improved therapeutic planning and reduced the risk of incomplete treatment. Accurate staging allowed clinicians to select individualized surgical or nonsurgical strategies according to tumor size, lymph node involvement, and metastatic spread [9].

One of the most clinically significant findings identified during the review was the transition from radical surgery toward conservative and organ-preserving treatment. Historically, vulvar cancer management relied heavily on radical vulvectomy combined with bilateral inguinofemoral lymphadenectomy. Although these procedures provided effective local disease control, they were associated with severe postoperative complications including chronic pain, wound infection, urinary dysfunction, sexual impairment, body image disturbance, and lower-limb lymphedema.

The GROINSS-V studies analyzed during the review confirmed that carefully selected patients undergoing sentinel node biopsy experience lower rates of lymphedema, wound complications, infection, and chronic postoperative pain. At the same time, oncologic safety and recurrence control remained clinically acceptable. These findings support the growing preference for minimally invasive nodal assessment in early-stage disease [10].

Another important result identified during this analysis involved the role of radiation therapy and chemoradiation. Modern radiotherapy techniques such as intensity-modulated radiation therapy (IMRT) significantly improved treatment precision. IMRT allows delivery of high-dose radiation directly to tumor tissues while minimizing exposure to surrounding healthy organs.

The analysis additionally confirmed the clinical value of concurrent chemoradiation in locally advanced vulvar cancer. Cisplatin-based chemoradiation protocols demonstrated improved local disease control and tumor regression. Several scientific publications suggested that neoadjuvant chemoradiation may reduce tumor size sufficiently to permit less extensive surgery.

These findings are particularly important for patients with advanced-stage disease where radical surgical procedures may cause significant anatomical destruction and postoperative disability. Integrative treatment combining chemotherapy and radiotherapy therefore represents a valuable alternative for selected patients.

A particularly significant finding of the review was the growing role of immunotherapy and targeted medicine. Immune checkpoint inhibitors targeting PD-1 and PD-L1 pathways demonstrated promising outcomes in selected patients with recurrent or metastatic disease. Although evidence remains relatively limited due to the rarity of vulvar cancer, early clinical data suggest that immunotherapy may become an increasingly important component of future management.

The discussion confirms that modern vulvar cancer treatment is progressively shifting from highly aggressive disease-centered therapy toward individualized patient-centered oncology. Future progress will likely depend on further development of molecular-targeted therapies, artificial intelligence-based diagnostics, immunotherapy, and comprehensive rehabilitation programs.

CONCLUSION

An integrative approach to the diagnosis and treatment of vulvar cancer significantly improves clinical management by combining advanced diagnostics, personalized therapeutic strategies, multidisciplinary collaboration, and comprehensive supportive care.

Modern oncologic practice increasingly favors organ preservation, minimally invasive staging techniques, molecular characterization, and quality-of-life optimization. Integrative care not only

enhances survival outcomes but also addresses the physical, emotional, sexual, and social consequences of disease.

Future progress in vulvar cancer management depends on continued development of precision oncology, immunotherapy, early screening strategies, and multidisciplinary healthcare systems capable of delivering individualized patient-centered treatment.

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