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Journal of Cancer Prevention & Current Research

Clinical case

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Complicated acute radiodermatitis: our experience

Abstract

Background: Cancer is a Worldwide Health problem. Ionizing radiation have been proved to be effective for the treatment of malignant neoplasms. External radiotherapy is considered one of the main tools to treat cancer. In spite of the development of new techniques, approximately 90 % of patients suffer from side effects as a result of high energy radiation exposure. The presence of cutaneous reactions is an adverse condition known as radiodermatitis or radiation-induced dermatitis. A greater understanding of the physiopathology and biological mecanisms responsible for the skin toxicity following radiotherapy would lead to an earlier diagnosis and proper management. A presentation of a complicated radiodermatitis is the aim of this case report.

Methods: A 41-years old female patient with a medical history of surgery due to a genital epidermoid carcinoma, receiving external radiotherapy, which was interrupted during the third week of treatment because of the presence of painful necrotic skin lesions, and some ulceratives zones in pelvic area. Was admitted at hospital with the diagnosis of Acute Complicated Radiodermatitis. A systemic antibiotic medication was prescribed and topical oclusive dressing with 1 % Silver Sulfadiazine.

Results: A complete recovery of patient was observed after 25th days of treatment.

Conclusion: In spite of absence of a medical consensus about the treatment of radiodermatitis, and early diagnosis and an appropiate management, leads to a favorable evolution of affected patients.

Keywords: cancer, radiodermatitis, radiotherapy

Volume 16 Issue 6 - 2025

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Received: November 29, 2025 | **Published:** December 23, 2025

Introduction

Cancer is a Worldwide Health problem. Ionizing radiation have been proved to be effective for the treatment of malignant neoplasms, based on the concept that tumors are more susceptible to radiations than normal tissue.[1] External radiotherapy is considered one of the main tools to treat cancer. The existence of a multidisciplinary professional group, a safe technical infraestructure and proper medical protocols ensure a positive therapeutical response and avoid damages of surrounding tissues and organs.[2] In spite of the development of new techniques, up to 90 % of patients develop side effects. The presence of cutaneous reactions due to high energy radiations exposure is an adverse condition known as radiodermatitis or radiation-induced dermatitis. This process can occur as an early complication or some months after the completion of therapy.[1,3] The Measurement of some biomarkers as serum ferritin , cytokines, C reactive protein and absolute lymphocytes count, have been investigated to predict the risk of developing severe radiodermatitis,[3] but the clinic patient assesment is the rule.

Since the first two weeks of treatment acute skin changes appear as redness or slight erythema. Dry or moist desquamation, ulcerations, bleeding or necrotic tissue can be recognized during the third or 4th week of exposure, depending on the severity of the reaction and as a result of loss of epidermal basall cell.[4] Late reactions are manifested as retractions, fibrosis ,and atrophy of the subcutaneous tissue.[4,5] The Radiation Therapy Oncology Group (RTOG)[2] have developed 4 criteria for the Classification of acute radiation dermatitis: Grade I:(Faint erythema or dry desquamation), Grade II :(Moderate erythema and edema, moist desquamation in folds), Grade III: (Severe swelling, confluent moist desquamation greater than 1,5 cm), Grade IV:(skin necrosis, ulceration, spontaneous bleeding). Several skin cares have been preconized to be usefull to prevent this complication,[3,4] but there is not evidence of the efficacy of prophylactive treatments in reducing the incidence of radiodermatitis.[5] A greater understanding of the physiopathology and biological mecanisms responsible for the skin toxicity following radiotherapy, would lead to an earlier diagnosis. An appropiate management ensure a better outcome

Clinic case

A 41 years-old female patient, sent from a Gynaecologic Center in Havana to ¨¨Calixto García Universitary Hospital¨¨, with the diagnosis of Epidermoid Genital Carcinoma treated with surgery a year before (partial vulvectomy) and undergoing external radiotherapy. During the 3rd week of radiations, develops skin lesions in the lower abdominal area (pelvic region), with a poor evolution and need for treatment interruption.

Symptoms: burning pain in the pelvic zone

On Physical Examination was found:

An antalgic walking.

Lower Abdominal Skin: Presence of ulceratives and necrotic lesions with superficial spontaneous bleeding. Swelling of the surrounding area. Edema of the pubis (Figure 1).

Figure 1 Grade IV acute radiodermatitis.

Laboratory tests

Complete Blood Count: Hemoglobin: 95 g/l Leukocytes: 115 x 109

Platelets: 200x109 (normal)

Microbiological Culture (swab): (+) Staphylococcus aureus Sp.

Diagnosis

Acute Grade IV Radiodermatitis, and bacterial infection added.

Moderate Anemia

Medical Management: Admission to a Burn Unit.

Systemic Antibiotic: Ceftriaxone 1 gr IV (intravenously), twice a day during 10 days.

Topical treatment: Mechanical Debridement under IV anesthesia and Daily cleaning with clorhexidine and saline solution plus oclusive dressing with 1 % Silver Sulfadiazine.

Oral Intake of vitamines was prescribed: Folic Acid, Vitamine C, Iron Salts (ferrous fumarate)

The clinical evolution was favorable (Figure 2,3).

Figure 2 Acute radiodermatitis 2 weeks after treatment.

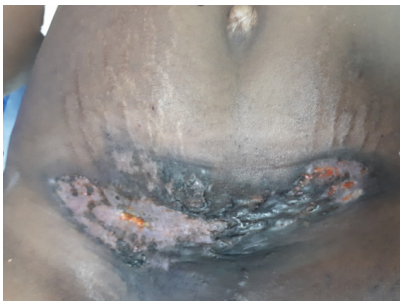

Figure 3 Complete healing of radiodermatitis. Day 25th.

Patient was discharged from the hospital at the day 25 th: Complete tissue epithelization after treatment was obtained.

Discussion

Skin is the first defensive barrier of the body. Irradiation of the skin leads to a direct injury of the epidermis, dermis and endotelial cells of blood vessels.[5] Involution of sebaceous glands and an Inflammatory response is developed with releasing of cytokines and some other mediators (reactive oxygen species).[2,6]

Radiation- induced dermatitis can be classified as acute or crhonic. The severity of the reactions depends on several factors as: patient's age and nutritional status, presence of comorbidities, tumor location and clinical stage, radiation per -fraction dose and total dose, and radiotherapy techniques.[3,7]

Dermocosmetic skin support as a proper hygiene, use of non-irritant soaps, topical herbal creams, or avoiding antiperspirants are advisible, but do not diminish or delay the onset of radiodermatitis.[4,8] The radioprotective effect of the topic Melatonine have been studied by Fernández-Tresguerres[9] but suggesting the need for long –term newer researches to confirm the results.

Some topical products may help to manage the symptoms and tissue damages. Wound cleaning and debridement are essential to diminish the healing time or to obtain a healthy granulation tissue for surgical wound closure if necessary (skin grafting).[3,10]

Solórzano et al.[11] report a 43.1 % incidence of radiodermatitis in patients receiving external radiotherapy during the 2nd week, mainly in anatomic areas affected by clothes, frictions and sweting (folds and neck). Infection of the irradiated areas was the rule.

Other Authors as Kots et al.[12] confirm wound colonization in radiation induced lesions, being Staphylococcus aureus the most frequent germ isolated , in correspondence with our findings.

Yang et al.[13] suggest the utility of topic steroids and natural products as Aloe and Cammomille ointments for the first clinical manifestations.

Other medical presentations such as Sucralfate cream have been reported to improve the angiogenesis process, diminishing edema and infection.[2]

Xiao et al.[14] published the usefulness of Trolamine and Alantoina for the treatment of patients affected by this complication.

Silver Sulfadiazine have been widely used for treating radiodermatitis.[7,15] Foch et al.[16] inform the benefits of applying 1% Silver Sulfadiazine on the irradiated skin, shortening the healing process in grade IV radiation induced dermatitis, similar to our experience. For them is not advisable the use of topic steroids or hyaluronic acid because of risk of secondary infection. The prescription of systemic steroids in patients with advanced radiations tissue damages have been recommended by Di Prinzio et al.[17]

Hyperbaric oxygen therapies was found to be an effective solution for wound healing and for treating fibrosis and retractions in crhonic radiodermatitis.[18] The benefits of using Low Level Light therapy or vascular laser have been confirmed because of its properties of tissue healing and regeneration.[8]

The development of differents grades of radiation dermatitis is considered a frequent side effect, with a negative psycological impact for patients, involving their quality of life and economical status.[11,14] A protocolized medical approach is needed to improve the prognosis.

Conclusions

There is no a complete consensus for the therapeutical management of radiodermatitis. Although several therapies have been described, a personalized patient treatment must be performed. It is a challenge for the medical Community to treat it because of the lack of universality of criteria. An early diagnosis is the key for a succesfull treatment.

Acknowledgement

None.

Citation: Castillo DZ, Portero DC, Tlaxcala VHS. Complicated acute radioderm
DOI: 10.15406/jcpcr.2025.16.00595

Conflict of interest

None declared.

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Citation: Castillo DZ, Portero DC, Tlaxcala VHS. Complicated acute radiodermatitis: our experience. *J Cancer Prev Curr Res.* 2025;16(6):153–155.
DOI: 10.15406/jcpcr.2025.16.00595