# Case Comparison of Carcinoma en Cuirasse and Radiation-Induced Morphea

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## Introduction

Carcinoma en Cuirasse (CeC) and Radiation-Induced Morphea (RIM) are two discrete and rare diagnoses, most commonly found among patients treated for breast cancer. Due to their similar clinical presentation and extremely low incidence rates, it can be challenging for providers to differentiate the pathologies promptly and accurately.

## Background

CeC:
- Originates from the French meaning “in armor” because of the thick leather-like changes of the skin
- Estimated 3-6% of cutaneous metastases in breast cancer are CeC[1]
- Median survival rate of 13.8 months[2]

RIM:
- Benign localized inflammatory sclerosis of the skin after RT
- Incidence rate between 1:378 and 1:3000[3,4]
- Rare diagnosis with only 21 cases reported over 10 years[5]

Differential diagnosis:
- Inflammatory breast cancer
- Radiation dermatitis

Punch biopsy for pathologic confirmation is critical for prompt management.



Figure 1. CeC of left chest wall and right back at time of diagnosis.



Figure 2. CeC left chest wall and right back at 6 weeks post-RT.

## Patient Comparison

| Case 1: Carcinoma en Cuirasse | Characteristic | Case 2: Radiation-Induced Morphea |
|---|---|---|
| 60s | **Age at Diagnosis (Years)** | 60s |
| Female | **Sex** | Female |
| Hypothyroidism, seasonal allergies | **Past Medical History** | Hypertension, Type 2 diabetes mellitus, Stage 3 chronic kidney disease |
| None | **Past Dermatologic/ Rheumatologic Conditions** | None |
| Invasive ductal carcinoma of the Right breast, ypT1a ypN2a, grade 3, 7 of 8 lymph nodes positive, negative margins, positive lymphovascular space invasion | **Oncologic Pathology** | Invasive ducal carcinoma of the Left breast, ypT1cN1a, grade 2, 11 of 15 lymph nodes positive, negative margins, positive lymphovascular space invasion |
| Neoadjuvant carboplatin, paclitaxel, and pembrolizumab, bilateral modified radical mastectomy with right axillary lymph node dissection, and adjuvant whole chest wall and regional lymph node irradiation of 50.4 Gy in 28 fractions with a sequential boost to the right mastectomy scar of 10 Gy in 5 fractions | **Prior Oncologic Treatments** | Partial mastectomy with axillary lymph node dissection and adjuvant whole breast and regional lymph node irradiation of 50.4 Gy in 28 fractions |
| 0 months | **Time from RT to Onset of Dermatologic Condition** | 8 years |
| Punch biopsy | **Investigation to Confirm Diagnosis** | Punch biopsy |
| Sacituzumab govitecan, palliative RT 26 Gy in 5 fx to the left chest wall and 20 Gy in 5 fx to the right back | **Treatment** | Topical clobetasol and UVB phototherapy |
| Reirradiation dermatitis, skin necrosis | **Risks of Treatment** | Recurrence associated with immunosuppression |

## Learning Points

CeC and RIM present as sclerotic skin plaques with fibrotic changes to the dermis and subcutaneous tissue, making them hard to distinguish, and accurate diagnosis depends on histologic findings. CeC is an aggressive mode of cancer dissemination and must be treated with prompt appropriate oncologic treatment. Radiation-Induced Morphea is an autoimmune reaction often treated with topical corticosteroids, systemic immunosuppression, or phototherapy. Timely diagnosis is critical due to the high mortality rate of CeC and the potential reversibility of RIM if treated promptly. For this reason, improved patient care is dependent on increased awareness of how to distinguish these pathologies.

## Discussion

**CeC:** Metastatic tumor cells disseminate via the superficial lymphatic vessels and are visualized in single-file lines, poorly differentiated, with atypical nuclei.[2] There are hyperpigmented, indurated, and sclerotic plaques as well as firm, erythematous papules.[6] The surrounding tissue is fibrotic with reduced vascularity. This fibrosis inhibits penetration of chemotherapy and can reduce efficacy of systemic therapies and nodules may coalesce and form diffuse indurations.[1]

**RIM:** There are no malignant tumor cells on histology. Extensive dermal fibrosclerosis and chronic inflammatory remodeling is caused by an autoimmune reaction triggered by ionizing radiation, leading to a T-cell response and increased fibroblast activation.[3] The disease presents with erythema, progressing to sclerotic plaques, and ultimately irreversible fibrosis of the dermis and subcutaneous tissue. Reports of the timing of symptoms range from 1 month to 32 years after the end of RT.[7] Treatment is with topical corticosteroids and calcineurin inhibitors for early stages, progressing to systemic treatment of immunosuppressants (after malignancy ruled out) such as mycophenolate mofetil and methotrexate if needed. In late-stages, additional therapies of phototherapy, hyaluronidase, heparin, and penicillin have been used. Retrospective analysis has shown that methotrexate or UVB phototherapy have achieved the best results.[5]

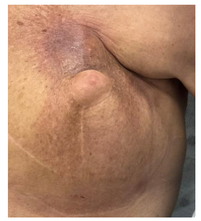


Figure 3. RIM left breast at diagnosis.



Figure 4. RIM left breast after 6 months of phototherapy. Markedly less hard on physical exam.

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**References:**

1. Culver AL, Metter DM, Pippen JE, Jr. Carcinoma en cuirasse. Proc (Bayl Univ Med Cent). 2019;32(2):263-5.
2. Salemis NS, Christofyllakis C, Spiliopoulos K. Primary breast carcinoma en cuirasse. A rare presentation of an aggressive malignancy and review of the literature. Breast Dis. 2020;39(3-4):155-9.
3. Panaitescu A, Nguyen H, Masson-Cote L, Fernandes CL. Extensive Morphea Following Adjuvant Radiotherapy for Breast Carcinoma-Case Report. Curr Oncol. 2025;32(1).
4. Friedman O, Barnea Y, Hafner A. Underdiagnosed and disfiguring - Radiation-induced morphea following breast cancer treatment. Breast. 2018;39:97-100.
5. Partl R, Regitnig P, Lukasiak K, Winkler P, Kapp KS. Incidence of Morphea following Adjuvant Irradiation of the Breast in 2,268 Patients. Breast Care (Basel). 2020;15(3):246-52.
6. Ibrahim SA, Wallis LS, Reid DC. Carcinoma en Cuirasse. JAMA Dermatol. 2023;159(5):555-6.
7. Partl R, Regitnig P, Tauber G, Potscher M, Bjelic-Radisic V, Kapp KS. Radiation-induced morphea-a rare but severe late effect of adjuvant breast irradiation : Case report and review of the literature. Strahlenther Onkol. 2018;194(11):1060-5.

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