Med Discoveries
An open access journal of science and medicine

Article Type: Case Report
Volume 3, Issue 7
Received: Jun 20, 2024
Accepted: Jul 11, 2024
Published Online: Jul 18, 2024

Cardiological Challenges in Managing Right Heart Failure due to Carcinoid Tumor: A Case Report

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Abstract

We present the clinical case of a 63-year-old patient treated for endometrial and breast neoplasia, currently under follow-up for a carcinoid tumor of the small intestine. The patient, who refused surgical intervention for her carcinoid tumor, was admitted for right heart failure. Clinical and paraclinical examinations revealed severe tricuspid insufficiency with a very dilated right ventricle in longitudinal systolic dysfunction. The patient was treated symptomatically with clinical monitoring. This case illustrates the complexity of managing oncological and cardiovascular comorbidities in patients with neuroendocrine tumors.

Introduction

Neuroendocrine carcinoid tumors of the small intestine are rare and can lead to severe systemic complications, including carcinoid syndromes and heart failure. This case report explores the clinical and therapeutic challenges encountered in a patient with significant history of multiple neoplasms and right heart failure due to a metastatic carcinoid tumor [1-3].

Case presentation

A 63-year-old female patient, previously operated on for endometrial neoplasia with hysterectomy three years ago and for breast neoplasia with mastectomy five years ago, is currently being followed for a carcinoid tumor of the small intestine for which she refused surgical indication. The patient was referred to the cardiology department for right heart failure.

Clinical examination revealed a patient in fairly good general condition, conscious (15/15), with effort-induced dyspnea, blood pressure at 110/70, an intense murmur at the tricuspid focus, bilateral lower limb edema, jugular venous distension, and moderate ascites.

The ECG showed signs of right heart overload.

Transthoracic Echocardiography (TTE) revealed a well-functioning left ventricle with an ejection fraction of 60%, a dilated right atrium (area 55 cm^2), and a very dilated right ventricle (56 mm) in longitudinal systolic dysfunction (TAPSE at 15 mm, S'RV at 7). The tricuspid valve was thickened and remodeled, with severe tricuspid insufficiency due to a 20 mm coaptation defect, and a plethoric, non-compliant Inferior Vena Cava (IVC) at 33 mm.

The patient was put on diuretics and aldactone with clinical and biological monitoring. Furthermore, managing this patient required a multidisciplinary approach involving oncologists, cardiologists, gastroenterologists, and other specialists.

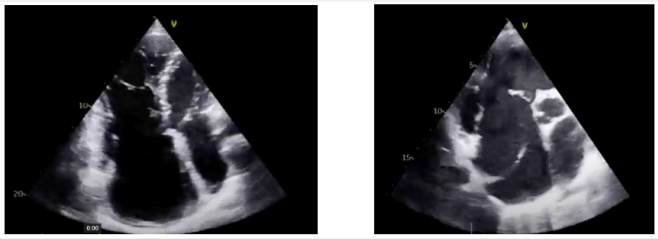

Figure 1: Rigid tricuspid valves with dilation of right chambers.

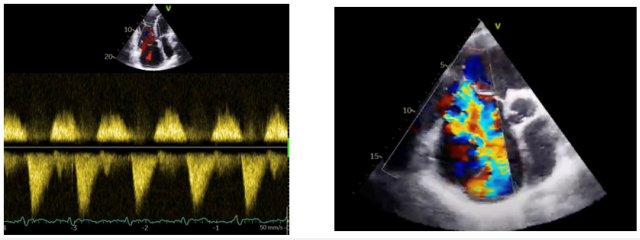

Figure 2: Complete retraction of tricuspid leaflets causing laminar tricuspid insufficiency.

Citation: Afendi L, Aiassi AE, Essadqi F, Bouaazizi AE, Bouziane M. Cardiological Challenges in Managing Right Heart Failure due to Carcinoid Tumor: A Case Report. Med Discoveries. 2024; 3(7): 1187.

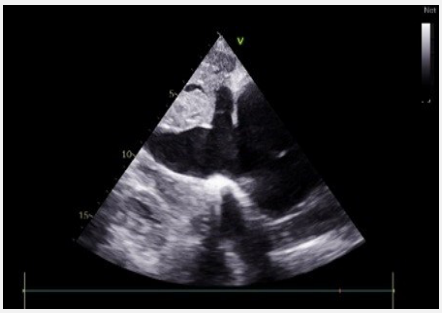

Figure 3: Dilated IVC at 33 mm.

Discussion

Managing cardiovascular complications in patients with neuroendocrine carcinoid tumors presents unique challenges, primarily due to hormonal secretions and frequent metastases associated with these tumors. For instance, right heart failure due to severe tricuspid insufficiency highlights the significant impact of these tumors on cardiac function [4].

Carcinoid tumors can secrete vasoactive substances like serotonin, tachykinins, and prostaglandins, causing carcinoid heart fibrosis, mainly affecting the right side. This leads to thickening and dysfunction of heart valves, particularly the tricuspid valve, resulting in tricuspid and pulmonary insufficiency and right heart failure. Symptoms include exertional dyspnea, asthenia, ascites, and peripheral edema, exacerbated by volume overload due to blood regurgitation into the right atrium and right ventricular dilation [5].

Treating right heart failure induced by a carcinoid tumor requires an integrative approach including:

- **Diuretics:** To manage volume overload, reduce peripheral edema and ascites, and decrease cardiac preload.
- **Vasodilators:** To reduce vascular resistance and afterload, thereby improving cardiac function.
- **Beta-blockers:** To slow heart rate and improve right ventricular function.

Rigorous follow-up is essential to evaluate treatment response and adjust therapies based on clinical evolutio [6].

Several studies emphasize the importance of a multidisciplinary approach for managing cardiovascular complications of neuroendocrine carcinoid tumors.

Marco Foti et al. (2022) showed that valve replacement surgery was essential for treating right heart failure due to Carcinoid Heart Disease (CHD). Gaspard Suc et al. (2023) reported high postoperative mortality and the need for better management strategies, especially for patients with hepatic metastases. Clémence Delhomme et al. (2023) stressed the importance of timely surgical intervention. Marcin Waligóra et al. (2022) presented a staged treatment approach for severe tricuspid regurgitation in carcinoid syndrome [7]. Ganesh Arun et al. (2022) highlighted the importance of early recognition and treatment to prevent the progression of right heart failure in CHD [8].

These studies support the proposed management strategies, such as using diuretics, vasodilators, and beta-blockers, and highlight the importance of a comprehensive and prompt approach to treating CHD.

Conclusion

This case highlights the importance of an integrated and individualized approach to managing patients with carcinoid tumors with cardiac complications. A thorough understanding of pathophysiological mechanisms, detailed clinical assessment, and an adapted therapeutic strategy are essential to optimize clinical outcomes and improve patients' quality of life.

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