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Abstract

This case study delves into the diagnostic challenges and comprehensive management of a 28-year-old previously healthy young adult who presented with exertional dyspnea, recurrent syncope, chest pain, generalized fatigue, and a history of tuberculosis (TB). After extensive evaluation, the patient was diagnosed with Idiopathic Pulmonary Artery Hypertension (IPAH), compounded by TB sequelae. This rare and life-altering dual diagnosis underscores the importance of early recognition, complex treatment strategies, and improvements in quality of life, genetic considerations, and a multidisciplinary approach to managing IPAH in young adults with TB sequelae. The FDVH DOVR KLJKOLJKWV WKH UHVLOLHQFH RI LQGLYLGXDOV IDFLQJ VLJQL¿FDQW ongoing research and awareness to improve the care and outcomes of individuals with these serious conditions.

Keywords:Tuberculosis; Genetic; TB sequelae

Introduction

Pulmonary Artery Hypertension (PAH) is a rare and debilitating condition characterized by elevated blood pressure in the pulmonary arteries, leading to increased strain on the right side of the heart. While PAH is more commonly associated with older individuals and those with underlying medical conditions, it can also a ect young, otherwise

with a six-month history of exertional dyspnea, recurrent syncope (fainting episodes), chest pain, generalized fatigue, and a past history of treated tuberculosis. ese symptoms had been progressively worsening, signi cantly impacting his daily life and overall well-being.

Diagnostic challenge

e patient's age and history of TB posed a diagnostic challenge. His symptoms were initially attributed to post-TB complications or the sequelae of the infection. However, given their persistence and severity, further evaluation was necessary [1].

Diagnosis:A er extensive evaluation, the following dual diagnosis was established:

Idiopathic pulmonary artery hypertension (IPAH): Right heart catheterization con rmed the presence of severe pulmonary artery hypertension, with a mean pulmonary artery pressure signi cantly exceeding 25 mm Hg at rest. In the absence of other underlying conditions, the patient was diagnosed with IPAH.

Tuberculosis sequelae: Chest imaging revealed evidence of prior TB infection with brotic changes in the lung tissue, suggesting the presence of TB sequelae [4].

Investigations

Echocardiography: is imaging study revealed severe right ventricular hypertrophy and dilatation, as well as tricuspid regurgitation, all indicative of the profound impact of PAH on the heart.

Right heart catheterization: Con rming the diagnosis of IPAH and quantifying the severity of pulmonary hypertension, this procedure played a pivotal role in the patient's evaluation [2].

Genetic testing: Given the patient's young age and the potential hereditary nature of PAH, genetic testing was conducted to assess for genetic mutations associated with IPAH.

Treatment

e patient's treatment plan encompassed a multidisciplinary approach, addressing both his physical and emotional well-being.

Pah-speci c medications: e patient was initiated on PAH-speci c medications aimed at lowering pulmonary artery pressures and improving cardiac function. is included the administration of a prostacyclin analog, Epoprostenol (Flolan), via continuous intravenous infusion, which achieved potent vasodilation in the pulmonary arteries. Additionally, he was prescribed endothelin receptor antagonists like Bosentan (Tracleer) to reduce pulmonary vascular resistance and a phosphodiesterase-5 (PDE-5) inhibitor, Sildena l (Revatio), to further lower pulmonary artery pressures [3].

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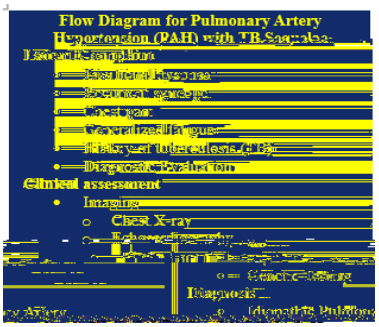

Figure 1: Flow diagram diagnosis of Idiopathic pulmonary artery hypertension (IPAH), complicated by the sequelae of Tuberculosis (TB).

Tb sequelae management: e presence of TB sequelae required ongoing monitoring and management to prevent exacerbations and complications. e patient was prescribed a course of corticosteroids to manage in ammation and brotic changes in the lung tissue. Additionally, he received TB-speci c therapy for a short duration to ensure that any latent TB infection was e ectively treated.

Oxygen therapy

Supplemental oxygen was prescribed to ensure adequate oxygenation, particularly during exertion and sleep, alleviating his symptoms and improving overall oxygen delivery to his tissues.

Physical activity and lifestyle modi cations

e patient was encouraged to remain physically active within his limitations and to maintain a balanced diet to support his overall health. ese lifestyle adjustments were essential in managing both IPAH and TB sequelae.

Psychological support

Recognizing the emotional toll of a dual diagnosis at a young age, the patient and his family received psychological support to cope with the psychological and emotional aspects of his condition, fostering a more holistic approach to his care.

Regular follow-up

Close monitoring of the patient's clinical status, cardiac function, and response to therapy was carried out through regular follow-up appointments with his healthcare team, ensuring timely adjustments to his treatment plan as needed.

Result

Over the course of treatment and follow-up:

Symptom improvement: e patient experienced a noticeable reduction in exertional dyspnea, chest pain, and syncope. His energy levels improved, enabling him to engage in daily activities more comfortably.

Cardiac function: Follow-up echocardiography revealed a reduction in right ventricular hypertrophy and dilatation, indicating a decreased strain on the right side of his heart and improved cardiac function.

Tb sequelae management: e patient's TB sequelae were e ectively managed, with reduced in ammation and brotic changes noted in follow-up imaging.

Improved quality of life: e patient's overall quality of life signi cantly improved as he became accustomed to managing his dual diagnosis and its associated challenges.

Genetic considerations: e patient and his family received genetic counseling to understand the implications of the genetic mutation associated with IPAH, shedding light on the potential risk for other family members.

Conclusion

is case underscores the striking impact of Idiopathic Pulmonary Artery Hypertension on a young adult, further complicated by TB sequelae. It emphasizes several crucial points:

Early recognition: Despite his age and TB history, the presence of PAH must be considered in individuals with exertional dyspnea and syncope, as early diagnosis and intervention are critical.

Complex treatment: e management of IPAH with TB sequelae requires a combination of PAH-speci c medications, oxygen therapy, lifestyle modi cations, psychological support, and targeted TB management, highlighting the importance of a multidisciplinary approach.

Quality of life: With appropriate treatment and support, young adults like the patient can experience improvements in their symptoms and overall quality of life, even with the added complexity of TB sequelae.

Genetic considerations: Genetic testing and counseling play a crucial role in understanding the genetic basis of IPAH and its potential implications for family members.

is case study exempli es the resilience of individuals facing signi cant health challenges and underscores the need for ongoing research and awareness to improve the care and outcomes of individuals with these rare but serious conditions. It highlights the importance of a holistic and multidisciplinary approach to managing complex cardiac conditions like IPAH in young adults with TB sequelae.

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