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RESEARCH LETTER

Clinical profile of patients with pulmonary hypertension

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Once considered an orphan disease, pulmonary hypertension is now recognized as a major contributor to morbidity and mortality, yet it continues to receive limited attention in clinical practice worldwide [1]. Currently, pulmonary hypertension affects over 70 million people worldwide, with a 10% incidence among those over 65 in both developed and developing countries. Pulmonary hypertension was defined as a mean pulmonary arterial pressure of more than 20 mmHg at rest by the sixth world symposium on pulmonary hypertension in 2018 [2]; however, the guidelines of the European Respiratory Society and European Society of Cardiology consider a threshold of 25 mmHg at rest [3].

In Bangladesh, pulmonary hypertension patients experience delayed or missed diagnosis due to non-specific symptoms, which sometimes lead to early preventable death. This study investigates the clinical characteristics of pulmonary hypertension in Bangladeshi adults, offering valuable insights for enhancing management approaches.

The study was conducted in the Department of Cardiology, Bangladesh Medical University, and included 60 patients (29 men and 31 women) with previously diagnosed pulmonary hypertension, confirmed by echocardiography, from November 2023 to April 2024. A 12-lead resting electrocardiogram (10 mm/mV, 25 mm/s) and echocardiography using a Simens GE Vivid E9 machine were performed. Transesophageal echocardiography was done when needed. Right ventricular systolic pressure and mean pulmonary artery pressure were measured according to the 2022 the European Society of Cardiology pulmonary hypertension guidelines. Right heart catheterization was performed in three idiopathic pulmonary hypertension cases with elevated RVSP, preserved left ventricular function, and no significant valvular disease on echocardiography. As per the 2022 guidelines of the European Society of Cardiology and European Respiratory Society, right heart catheterization was necessary for definitive hemodynamic confirmation. Pulmonary hypertension is categorized into five groups based on etiology, while its severity is evaluated using right ventricular systolic [4].

The mean age of the participants was 49.6 (14.6) years, with 31 females (52%) and 29 males (48%). Type 2 pulmonary hypertension was the most frequent type (45.0%) with a mean pulmonary artery pressure of 46.0 (7.6) mmHg, followed by Type 1 pulmonary hypertension (31.6%). Pulmonary hypertension was mild in 46.7%, moderate in 36.7%, and severe in only 16.7%. Common symptoms were dyspnea (93.3%), chest pain (91.6%), and fatigue (93.3%). Right heart catheterization in three idiopathic pulmonary hypertension cases showed a mean pulmonary artery pressure of 56.7 (10.7) mmHg, a mean pulmonary vascular resistance of 9.3 (0.8) Wood units, and a mean pulmonary capillary wedge pressure of 10.9 (1.0) mmHg.

In our study, most patients were comparatively younger to middle-aged. Krishna and Venu reported a higher mean age of 51.9 (11.5) years [5]. The younger age distribution in our cohort may reflect demographic differences and progressiveness of the disease.

Key messages

Pulmonary hypertension remains under-recognized in Bangladesh. Dyspnea, chest pain and fatique were the most common manifestations in this series; 16.7% were severe cases. These are different from other populations worldwide. Therefore, pulmonary hypertension in Bangladesh deserves special attention.

Table 1 Severity, types and clinical features of patients with pulmonary hypertension (n=60)

Variables	Results
Number (%)	
Sex	
Male	29 (48.0)
Female	31 (52.0)
Symptoms	
Dyspnea	56 (93.3)
Chest pain	55 (91.7)
Fatigue	55 (91.7)
Leg oedema	47 (78.3)
Palpitation	49 (81.6)
Cough	27 (45.0)
Hoarseness of voice	3 (5.0)
Hemoptysis	5 (8.3)
Syncope	3 (5.0)
Cyanosis	3 (5.0)
Severity of pulmonary hypertension	
Mild	28 (46.7)
Moderate	22 (36.7)
Severe	10 (16.7)
Types of pulmonary hypertension	
Type 1	19 (31.6)
Type 2	27 (45.0)
Type 3	7 (11.7)
Type 4	3 (5.0)
Type 5	4 (6.7)
Mean (SD)	
Age (years)	49.6 (14.6)
RVSP (mmHg) by severity of pulmonary hypertension	
Mild	43 (7.0)
Moderate	58 (5.0)
Severe	80 (7:0)
mPAP (mmHg) of type of pulmonary hypertension	
Type 1	54 (28.9)
Type 2	46 (7.6)
Type 3	47.4 (11.0)
Type 4	53 (2.0)
Type 5	49.5 (16.2)

SD indicates standard deviation; RVSP, right ventricular systolic pressure; mPAP, mean pulmonary artery pressure. RVSP 36–49 mmHg is mild, 50 –69 mmHg is moderate, and ≥70 mmHg is severe pulmonary hypertension. Types of pulmonary hypertension are based on etiology as per reference[4].

Regarding gender distribution, female patients were predominantly more. For instance, females comprised 59% of cases in the Swiss registry [6] and 65.3% of cases in the French registry [7]. In contrast, Bansal *et al.* [8] found somewhat more males (54%) than females (46%). In Bangladesh, women often have limited healthcare access, and our study found a greater number of female participants. This also reflects the known female predominance in pulmonary hypertension.

Similar to Dzudie *et al.*, pulmonary hypertension due to left heart disease (Type 2) was the most common type found in our study [9]. Type 1 pulmonary hypertension was our second most prevalent type and exhibited the highest mPAP on echocardiography. This is likely due to progressive vascular remodeling, increased pulmonary vascular resistance, and absence of left-sided pressure overload. The predominance of type 2 pulmonary hypertension indicates that it arises from the chronicity of left heart disease. This condition is amenable to prevention and treatment.

Most participants presented with mild to moderately severe pulmonary hypertension based on RVSP measurements. Krishna and Venu found a similar distribution, with 32% having mild, 38% having moderate, and 30% experiencing severe pulmonary hypertension [5]. This distribution suggests that many patients had mild to moderate disease, which may reflect disease progression or clinical presentation differences.

The most frequently reported symptoms were shortness of breath, fatigue, and chest pain. Bansal et al. reported dyspnea (86.4%) and cough (77.5%) as the most common symptoms [8]. These findings are commonly seen in pulmonary hypertension, and symptoms become more pronounced with the progression of the disease.

Right heart catheterization in three idiopathic pulmonary hypertension cases confirmed pre-capillary pulmonary hypertension with significantly elevated pulmonary vascular resistance and preserved wedge pressures, suggesting that it was pre-capillary. AL-Kinani observed similar mean pulmonary artery pressure values [10].

This study highlights the clinical profile and hemodynamic characteristics of pulmonary hypertension in Bangladeshi adults, with left heart disease (Type 2) emerging as the most common type. The majority of cases were mild in severity. Fatigue and dyspnea were the predominant presenting symptoms.

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Author contributions

Conception or design of the work; or the acquisition, analysis, or interpretation of data for the work: CKS, MFI, DM, JA, EB. *Drafting the work or reviewing it critically for important intellectual content:* CKS, MFI, DM, JA, EB. *Final approval of the version to be published:* CKS, MFI, DM, JA, EB. *Accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved:* CKS, MFI, DM, JA, EB.

Conflict of interest

We do not have any conflict of interest.

Data availability statement

We confirm that the data supporting the findings of the study will be shared upon reasonable request.

Supplementary file

None

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