

# Pulmonary embolism associated with the act of defecation. “The bed pan syndrome”

## Abstract

Pulmonary embolism as the cause of death is frequent in a hospital setting. The authors report on seven cases of fatal pulmonary embolism that occurred during or after defecation, which they referred to as the Bed Pan Syndrome. A retrospective autopsy study for the three years 2015-2017 was done on all deaths reported as pulmonary embolism. During the period of study 1778 autopsies were performed and eighty one (81) deaths were recorded as pulmonary embolism, which represented 4.6% of the cause of death during the period of study. Seven cases or 8.6% of those dying from pulmonary embolism, died suddenly during the act of defecation. The mean age of patient in this study was 64.7 years. Diabetes Mellitus and Essential hypertension were cor-morbidities in 42.9% of cases. Pulmonary embolism associated with the act of defecation is seldom reported in the medical literature and the seven (7) such cases are the subject of discussion in this presentation.

**Keywords:** pulmonary embolism, bed pan syndrome, act of defecation, autopsy

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Hubert Daisley, Arlene Rampersad, Dawn Lisa Meyers

Department of Pathology, General Hospital San Fernando, Trinidad and Tobago

**Correspondence:** Hubert Daisley, Department of Pathology, General Hospital San Fernando, Trinidad and Tobago, Email profhdjr@gmail.com

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## Introduction

Deep vein thrombosis and pulmonary embolism are common events in a clinical setting. These events often lead to morbidity and mortality and although preventative measures have been instituted, these events occur regularly. In autopsy based studies pulmonary embolism accounts for 1.25% to 10.88% of all cause of death.<sup>1,2</sup> In most of these deaths, deep vein thrombosis might have heralded the fatal event of pulmonary embolism which clinically presents with swelling and discomfort of limbs, chest discomfort and breathing difficulties. Pulmonary embolism associated with the act of defecation is seldom reported in the literature.<sup>3</sup> This mode of presentation of pulmonary embolism is often fatal and physicians should be aware of this clinical sign of pulmonary embolism.

## Material and methods

A retrospective study off all deaths that were autopsied and recorded as pulmonary embolism were undertaken for the years 2015-2017 from a Public Hospital in Trinidad W.I. The authors also collected all the available demographics and clinical data of the cases. From this group of deaths, those dying from pulmonary embolism associated with the act of defecation were isolated. Table 1 shows the seven cases and their clinical demographics.

## Results

During the study period 2015-2017, 1778 autopsies were performed and 81 cases of pulmonary embolism as the cause of death were recorded. Seven cases of pulmonary embolism or 8.64 % were recorded to have occurred during or after defecation. There were five females and two males amongst the group studied and their age's ranges from 34 years to 89 years with a mean of 64.7 years (Table 1).

One patient had suffered a fractured hip and had recent fixation, while one had undergone recent radical prostatectomy for cancer of the prostate gland. One had metastatic gastric cancer and three

suffered both from diabetes mellitus and Essential Hypertension. Two had deep vein thrombosis of their lower extremities. All patients had saddle pulmonary embolism and died suddenly. There were no post Partum patients amongst the study.

**Table 1** Shows victims of sudden death with pulmonary embolism as the cause, associated with the act of defecation

| Age      | Gender | Saddle | Clinical co-morbidities   |
|----------|--------|--------|---|
| 67 years | F      | Saddle | Parkinson's disease   |
| 89 years | F      | Saddle | Metastatic gastric cancer   |
| 74 years | F      | Saddle | Fracture Hip with recent fixation, DVT Diabetes Mellitus, Hypertension            |
| 50 years | M      | Saddle | Myocardial Infarction, Hypertension, Congestive Heart Failure. Diabetes Mellitus  |
| 34 year  | F      | Saddle | DVT   |
| 68 years | M      | Saddle | Recent radical Prostatectomy  |
| 71 years | F      | Saddle | Diabetes Mellitus Hypertension, Coronary Artery disease, DVT-Deep Vein Thrombosis |

## Discussion

Pulmonary embolism is a frequent cause of death in a hospital setting and has a reported incidence as high as 10.88%-12.6%.<sup>2-5</sup> Pulmonary embolism often presents with chest discomfort, tightness, pain and difficulty in breathing. The clinical conditions frequently recorded in which pulmonary embolism occurs are deep vein thrombosis, following long journey in confined spaces such as aircrafts,

post surgery, atrial fibrillation, congestive cardiac failure, sickle cell anemia<sup>6</sup> dehydration, during treatment with antipsychotics,<sup>7</sup> oral contraceptive usage,<sup>8</sup> and hypercoagulable states. In many instances it occurs without an underlying clinical condition and amongst these patients lupus anticoagulant and antiphospholipid antibodies are sometimes present.<sup>9</sup>

Diabetes mellitus and Hypertension have been reported as comorbidities in pulmonary embolism. In our study three patients with the bedpan syndrome suffered from diabetes mellitus.<sup>10</sup> In all cases of pulmonary embolism Virchow's triad, for thrombogenesis in veins namely hypercoagulability, stasis and intimal injury are met.<sup>11</sup> It is a well-known fact that venous thrombosis and pulmonary embolism occurs with increase frequency amongst post partum patients.<sup>12-14</sup>

Amongst post-partum patient it was observed that a number had fatal pulmonary embolism following call for and usage of the bedpan. This undocumented event was often referred to as the Bed Pan Syndrome in our clinical setting. The authors have coined this entity of the Bed Pan Syndrome to include all patients who suffer pulmonary embolism in association with the act of defecation.

Pulmonary embolism usually arises from deep veins in the lower extremities. Two patients in this series suffered deep vein thrombosis. Pulmonary embolism may arise from pelvic veins thrombosis.<sup>15,16</sup> This might have been the case in the patients above that had radical prostatectomy, and hip fixation.<sup>17,18</sup> The migration of these pelvic emboli from the pelvic venous drainage system, or prostate venous plexus may be responsible for the initiation of the feeling of defecation and their subsequent fatal pulmonary embolism. This might be the mechanism which initiates the sensation of defecation in the other five cases as the emboli passes through the pelvic venous system en-route to the pulmonary artery.

There is another theory, which implicates the pathogenesis of pulmonary embolism during defecation. Defecation syncope occurs with the Valsalva maneuver. It is not a single clinical distinct entity and cardiac disease and pulmonary embolism are among the aetiologies.<sup>19-21</sup> The action of straining during defecation may facilitate embolization in patients who already have deep vein thrombosis or pelvic vein thrombosis. The urge to defecate is a clinical sign that pulmonary embolism might be eminent in those patients who are at risk.<sup>22</sup> In our study this clinical sign, which we refer to as the Bed Pan Syndrome, carries a high mortality of sudden death from saddle pulmonary embolism. Clinicians should be aware of this entity.

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## Conflict of interest

Authors declare there is no conflict of interest.

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