

## **Protracted Bacterial Bronchitis Related to Bagpipe Playing in a Teenager**

C.M. Stephens, M.N. Chroinin

Department of Paediatrics and Child Health Cork University Hospital, Ireland.

### **Abstract**

#### ***Presentation***

A 15 -year- old girl presented with a progressive and productive cough and wheeze for four years unresponsive to bronchodilators, steroids, antimicrobials or physiotherapy.

#### ***Diagnosis***

Sputum sample revealed Protracted Bacterial Bronchitis (PBB) secondary to *Pseudomonas Aeruginosa* in a champion bagpipe player.

#### ***Treatment***

IV antibiotics and two cycles of nebulised tobramycin led to complete resolution of symptoms.

#### ***Discussion***

Wind instruments can be associated with lung disease. Instruments must be correctly cleaned and stored and the importance of this to be made well known to all music players. A thorough social history must always be taken including past times. In particular, in those with recurrent pulmonary infections or conditions such as cystic fibrosis or primary ciliary dyskinesia a history of playing wind instruments should be sought and proactive advice given.

### **Introduction**

Lung diseases have been reported in adults, with cases directly related to fungal contamination of wind instruments; bagpipes, saxophones and trombones. It is an avoidable disease with symptoms resolving when the causative pathogen is removed, and correct cleaning and maintenance of the instrument is practiced. There are similar reports in paediatrics.

## Case Report

A fifteen- year- old girl presented with persistent productive cough and wheeze for four years, unresponsive to bronchodilators, high dose inhaled steroids, oral antibiotics and physiotherapy.

She was born at 29½ weeks gestation, requiring brief intubation. She had resolved, mild eczema, but no food allergies. There was no family history of lung diseases.

She had marked inspiratory and expiratory wheeze and coarse crackles bilaterally. Other systemic examinations were normal.

Initial impression was that of bronchiectasis related to cystic fibrosis or primary ciliary dyskinesia. It later emerged that she was a champion bagpiper, practising regularly on a chanter and competing throughout the country. There was no cleaning routine for the instrument, which was often, heavily wet after being played.

Routine laboratory investigations were normal. Immunology work-up, CF genetics and nasal brushings were negative. Sputum sample was positive for pan- sensitive *Pseudomonas Aeruginosa*. High Resolution CT-Thorax showed no evidence of bronchiectasis. Initial spirometry revealed an FEV<sub>1</sub> 81 % with no significant bronchodilator response.

Following a course of IV antibiotics and two cycles of nebulised tobramycin there was full resolution of symptoms. Spirometry improved; to FEV<sub>1</sub> 108% and on later follow up to 122% predicted. Regular inhalers were no longer needed.

## Discussion

We propose that our patient had chronic suppurative bronchitis, secondary to *pseudomonas aeruginosa* triggered or exacerbated by bagpipe playing. Cultures were not taken from the instrument. However, given previous reports in the literature, we suggest the strong likelihood that bagpipe playing in this teenager had a significant role in the pathogenesis of her disease.

Hypersensitivity Pneumonitis encompasses a range of inflammatory and allergic respiratory diseases triggered by the inhalation of fine particles; both organic and inorganic<sup>1,2,3</sup>. It has been described in association with prolonged bagpipe playing in adults with fungi being the causative organisms. Higher rates of chest infections have been reported in this cohort<sup>4</sup>. This phenomenon has loosely been coined 'Bagpipe Lung'. The moist internal area of bagpipes creates an idyllic environment for bacteria and fungi to thrive in, though with simple cleaning, this can be reduced<sup>5,6</sup>.

We suggest that a newer phenomenon termed 'Protracted Bacterial Bronchitis' may be responsible for our case. It describes respiratory conditions with clinical features of bronchiectasis in the absence of the associated radiographic features<sup>7</sup>. An important differentiating feature clinically between it and bronchiectasis is its higher incidence but less severe pathogenesis<sup>8</sup>.

Multiple risk factors and aetiologies are associated with it, but to date, musical instrument use has not been cited. *Pseudomonas Aeruginosa* is a common pathogen in bronchiectasis and implicated in cases of chronic suppurative bronchitis<sup>8</sup>. In our case, cultures were not taken from the instrument. However, given the previous case reports we suggest the strong likelihood that the playing of the bagpipes in this teenager had a significant role in the pathogenesis of her disease.

Airway disease secondary to wind instruments is avoidable. The importance of correct cleaning and maintenance of these instruments is now being recognised and advocated for. Furthermore, an entrepreneurial Scottish teenager has developed a novel blowpipe that can minimise the accumulation of saliva in the bagpipe and ultimately reduce the growth of pathogenic organisms<sup>9</sup>.

**Declaration of Conflicts of Interest:**

The authors have no conflicts of interest to declare.

**Corresponding Author:**

Carol Stephens,

Cork University Hospital

E-mail: [c.stephens552@gmail.com](mailto:c.stephens552@gmail.com)

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