ORIGINAL ARTICLE

Post Bronchoscopy Fever – Bacteremia is not the Risk Factor

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Abstract

Objectives
To assess the incidence, clinical characteristics of post bronchoscopy fever and possible risk of bacteremia after fiberoptic bronchoscopy.

Setting
Institute of chest medicine Mayo Hospital Lahore – A Tertiary Care University Hospital affiliated with King Edward Medical University, Lahore, Pakistan.

Design
Prospective clinico-pathological study

Patients and Methods
Ninety three adult patients (male – 70 & female – 23) between ages 38 to 83 years undergoing fiberoptic bronchoscopy between January 2005 – April 2007 were studied for bacteremic risk of postbronchoscopy fever.

Results
Seven (7.5 %) patients out of ninety three developed fever after bronchoscopy. Mean onset time of fever was 6.5 hours after fiberoptic bronchoscopy and mean duration of fever was 14.5 hours. The fever subsided spontaneously within 24 hours. No micro-organisms were isolated from blood culture specimen, taken from those patients who developed fever after bronchoscopy.

Conclusion
Fever is a relatively frequent and transient adverse effect after fiberoptic bronchoscopy and bacteremia is not the risk factor.

Key Words
Fiberoptic bronchoscopy, Fever, Transient, Blood Culture.
Introduction

Fiber optic bronchoscopy is a medical procedure that allows visual examination of the airways. It has become the procedure of choice for examination of lower respiratory tract since its introduction in 1968. It can be a diagnostic or a therapeutic procedure. The reported frequency of mortality from this procedure ranges from 0 to 0.5%.

Common indications for bronchoscopy include unexplained symptoms like persistent cough, coughing of blood, fixed wheezing, hoarseness, dyspnea and abnormal radiology.

Serious complications such as arrhythmias, massive bleeding and pneumothorax occur rarely. In contrast, fever following fiberoptic bronchoscopy has been frequently reported. Postbronchoscopy fever usually begins a few hours after fiberoptic bronchoscopy and subsides spontaneously within a day or so. The reported frequency of this complication ranges from 1 to 20%. According to previous reports, postbronchoscopy fever is commonly associated with advanced age, in the presence of abnormal bronchoscopic findings, the documented endobronchial obstruction, intervention for malignancy, bronchial specimens and instillation of topical anesthetic solution through the bronchoscope.

Many patients were found to have positive blood culture after rigid bronchoscopy. Transient bacteremia has been considered to be responsible for postbronchoscopy fever however bacteremia was rarely detected in immunocompetent patients.

Postbronchoscopy fever is related to elevation of Proinflammatory enzymes such as tumor necrosis factor (TNF), interleukin-1B and interleukin-6, suggesting that fever may be related to the release of pyrogenic mediators rather than bacteremia. Postbronchoscopy fever may develop in patients with diseases associated with high level of underlying pyrogenic cytokines.

In this prospective study we planned to assess the incidence, clinical characteristics of postbronchoscopy fever and possible risk of bacteremia following bronchoscopy.
Materials & Methods

Study Subjects

Ninety three (male – 70 & female – 23) patients undergoing Fiberoptic bronchoscopy between January 2005 to April 2007 were included in the study. The study subjects were those who fulfill the following criteria

1. Normal body temperature.
2. No use of immunosuppressant agents and steroids.
3. No treatment with antibiotics.
4. Patient not on antipyretics.
5. No underlying immunosuppressant disease like diabetes mellitus.

All the patients were admitted in the ward 48 hours before bronchoscopy.

Bronchoscope Cleaning and Disinfection:

Bronchoscope was thoroughly cleaned with a sterilized brush outside and the inner channels. Cidex (Glutaraldehyde) 2% solution was prepared in which the endoscope up to the proximal control unit immersed for 20 minutes for disinfection. Accessory equipments such as biopsy forceps and brushes were also disinfected by soaking them in cidex solution for 20 minutes.

Bronchoscopy

The procedure was performed by using a flexible fiberoptic bronchoscope (model – BF - IT 20 olympus Tokyo Japan). During bronchoscopy, record of used medicines like 2% and 4% Xylocain were kept. Volumes of instilled normal saline solution and retrieved amount of bronchial washings were measured. Bleeding severity was observed as mild to severe. After bronchoscopy, the patients were kept in the ward under observation for 48 hours to record oral temperature every 4 hourly and any other accompanied symptom. A temperature of 98.6°F was taken as normal.

Laboratory Evaluations

X ray chest, complete blood picture, random blood sugar, sputum examination for acid fast bacilli and spirometry were performed before bronchoscopy. During bronchoscopy, samples like bronchial washing, brushing and biopsy were obtained and submitted for pathological evaluation. In those patients who developed fever, single specimen of blood was taken for culture & sensitivity and also for complete blood examination. X ray chest was repeated to see any new lesion.
Results

Ninety three subjects were included in this study and fever was recorded in 7 (7.5%) patients during the first 48 hours of bronchoscopy. Amongst seven febrile patients, five were male and two were female. Four male and one female were above the age of 60 years. In those patients who developed temperature, the mean peak temperature was 101.5°F (range 99.8°F to 103°F) and the mean fever onset time was 6.5 hours after bronchoscopy. In all cases the fever subsided within a day, with a mean fever duration of 14.5 hours (graph 1). No antipyretic medicine was used to relieve fever. Accompanying symptoms with fever were cough which was present in 4 (57.1%) patients, mild hemoptysis in 3 (42.8%) patients and chills was noted in 1 (14.5%) patient (table 1). During bronchoscopy only mild bleeding was observed in three febrile cases. Bacterial organisms were not isolated from blood culture specimen taken at the time of fever. Significant rise in total leukocyte counts between 12000 to 15000 were reported in the peripheral blood at the time of fever compared to normal pre bronchoscopy figures. X ray chest taken after 48 hours of bronchoscopy in febrile patients showed no new lesion.

Table 1

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Symptoms</th>
<th>No. of patients/ percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cough</td>
<td>4 (57.1%)</td>
</tr>
<tr>
<td>2.</td>
<td>Hemoptysis</td>
<td>3 (42.8%)</td>
</tr>
<tr>
<td>3.</td>
<td>Chills</td>
<td>1 (14.2%)</td>
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</tbody>
</table>
Graph 1

<table>
<thead>
<tr>
<th>Total</th>
<th>Fever group</th>
<th>Non fever group</th>
</tr>
</thead>
<tbody>
<tr>
<td>93</td>
<td>7</td>
<td>86</td>
</tr>
</tbody>
</table>

Graph 2

**Fever Characteristics**

- Mean onset time: 6.5 Hours
- Mean duration of fever: 14.5 Hours
Discussion

Different studies reported on incidence of post bronchoscopy fever showed results of 1.2 – 25 % adults \(^8,9,11\). However fever after bronchopulmonary lavage was reported in 21% healthy volunteers \(^10\). Fever was reported in 10 – 50 % of cases who under went transbronchial needle aspiration\(^11\). In the present study, fever developed in 7.5 % of patients which matches with the results of the other studies \(^8,9,11,13\). Post bronchoscopy fever was noted more in elder age group (5:2) and in those patients who have endoscopic findings which is in accordance with other studies \(^5,16\).

The mechanism of fever after bronchoscopy has not been elucidated. Previous reports suggest that bacteremia is rarely detected in immunocompetent patients \(^12,13\), as our study showed no bacteremia in febrile patients.

Febrile patients revealed leukocytosis in specimens of blood which were taken at the time of fever and this is comparable to the results of studies conducted by Sang – Wonum et al\(^13\) and Terashima, T et al\(^14\). This could be due to systemic inflammatory response due to fiberoptic bronchoscopy. This finding is in agreement to the previous study conducted by Cohen AB et al\(^15\). Proinflammatory cytokines such as tumor necrosis factor (TNF) and interleukin-1 are now considered as central features of systemic inflammation.\(^17\). Postbronchoscopy X rays performed after 48 hours in febrile patients showed no new change.

Conclusion

Fever is a common adverse effect following flexible fiberoptic bronchoscopy and it is not associated with bacteremia.
References