

Evaluation of Postoperative Pyrexia within 48 Hours of Elective Surgery in General Surgical Wards of B. V. Hospital, Bahawalpur

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ABSTRACT

Aim: To evaluate causes of postoperative pyrexia within 48 hours of elective surgery.

Design: A descriptive prospective case series.

Setting: general surgical wards of Bahawal Victoria Hospital, Bahawalpur.

Period: from 27TH September, 2012 to 26TH March, 2013.

Methods: A case series of 100 elective surgical patients who had temperature of 38 C or more was analyzed. Causes of postoperative fever evaluated on the basis of history, clinical examination and with the aid of investigations. The following data was collected: kind of surgery performed, type of anesthesia, clinical symptoms & signs and specific investigations during postoperative period. All data was analyzed using SPSS-16.

Results: Evaluation of post operative patients revealed that the most common cause of fever within 48 hours was atelactasis (51%). Other causes were unexplained fever in 35%, Malaria in 9% and Phlebitis in 5%.

Conclusion: It is concluded that the most common etiological factors are non infectious in origin. Malaria should also be considered in surgical patients as the cause of fever because it is endemic in Pakistan. Postoperative fever evaluation based on symptoms and physical examination is feasible, safe, decreases random testing and increases the yield of positive test results.

Keywords: Post-operative, fever, pyrexia, atelactasis.

INTRODUCTION

Surgical complications can occur after any operation. Postoperative complication is 'any negative outcome' as perceived either by the surgeon or the patient. Fever or pyrexia is a disorder of body's thermoregulation. Fever has been reported in 40% of patients after major surgery which may arise from either infectious or non-infectious causes. It may be an early presentation of a potentially fatal problem, such as intra-abdominal sepsis or part of a more benign process, such as atelactasis or drug fever. In healthy individuals, a core temperature of 37°C (98.6°F) is considered to be normal with an expected diurnal variation of approximately 0.8°C (1.4°F)^{2,3}.

Fever-associated cytokines, including interleukin IL-1, IL-6, tumor necrosis factor (TNF)-alpha and interferon (IFN)-gamma are produced by a variety of tissues and cells. There is some evidence that IL-6 is the cytokine most closely associated with postoperative fever.

Most fevers that develop within the first 48 hours of surgery are benign and self-limiting. However, it is critical that physicians who provide postoperative

care are able to recognize the minority of feverish patients that demand immediate attention. It can be done on the basis of the patient's history, a targeted physical examination and further studies if appropriate².

Fever may become distressing for both the patient and his/her family. Patient's hospital stay can increase. Investigations and treatment is the additional trauma for the patient's health and economy. Their compliance towards treatment may also be affected.

The rationale of this study is the early evaluation of pyrexia before a patient suffers from complications. In this way more serious complications, expensive investigations and medications can be avoided. We can be helpful to our patients on social, economical and psychological grounds as well.

MATERIAL & METHODS

Immunocompetent patients of either gender who developed pyrexia within 48 hours of elective general surgery at B. V. Hospital, Bahawalpur, were included in the study. They were explained about the research and were requested to sign a consent form. Prospective data of 100 postoperative general surgery patients who had temperature of 38°C or more, within 48 hours of surgery, was collected. Evaluation was based on history, targeted clinical

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examination and specific investigations. Different variables of this study were age, temperature, respiratory rate and total leukocyte count. Categorical data obtained from the study included gender, clinical findings (cough, shortness of breath, decreased breath sounds or crepitations), blood smear for malarial parasite and chest radiographs.

All the information was analyzed using SPSS version 16 to calculate means and standard deviation for quantitative variables and frequencies for the categorical data. As it was a case series study so, simple description done and percentages were calculated. It did not have any analytical part, so no test of significance was applied.

RESULTS

Prospective analysis of 100 postoperative patients who had axillary temperature of 38°C and more within 48 hours of elective surgery was carried out. Commonly used anesthesia in elective surgery was general anesthesia. There were 64% patients who underwent general anesthesia while 22% surgeries were done under local anesthesia and 14 % under spinal anesthesia. (Table 1).

Most common cause of fever within 48 hours was atelectasis in 51%. Other causes were unexplained fever in 35%, Malaria in 9% and Phlebitis in 5%.

In case of atelectasis, 29 patients were having only cough with fever while in 19 patients there were decreased breath sounds too. Three patients were also having crepitations on auscultation (Table II). There were 30 patients in whom chest radiographs were suggestive of the disease while in 21 cases there were no radiological findings correlating with atelectasis.

Thirty five percent patients were diagnosed as cases of unexplained fever as clinical findings and investigations including chest radiographs did not show any abnormality.

There were 17 cases who had fever with rigors or chills. Blood smear for malarial parasite was positive in 9 patients while 8 patients did not show plasmodium parasite on blood films.

Clinical examination of 5 cases showed pain, redness and swelling at cannula site. On clinical correlation they were diagnosed as case of phlebitis.

Table 1: Surgical Procedures

Operative procedure	G/A	S/A	L/A
Anorectal surgery	2	3	
Breast surgery	13		9
Cholecystectomy	20		
Thyroidectomy	16		
Inguinal Hernia repair	1	11	13
Ventral hernias repair	9		
Colorectal malignancies	3		
Total	64	14	22

Table 2: Postoperative Clinical Findings

Causes	Fever	Cough only	Decrease Breath sounds (+/-cough)	Crepitations	Pain, redness and swelling at canula site	Fever with rigors
Atelectasis		29	19	3		
Unexplained fever	27	-	-	-	-	8
Malaria	-	-	-	-	-	9
Phlebitis	-	-	-	-	5	-
Total	27	29	19	3	5	17

Table 3: Cause of Pyrexia and Surgical Procedures

Causes	Anorectal surgery	Breast surgery	Chole-cystectomy	Thyroidectomy	Inguinal Hernia repair	Ventral hernias repair	Colorectal malignancies
Atelectasis		10	18	13	1	8	1
Unexplained fever	4	8	1	2	18		2
Malaria	1	2	1	1	4		
Phlebitis		2			2	1	

DISCUSSION

Fever is one of the most common problems faced in postoperative period. Whatever the cause, fever increases morbidity hence its evaluation is of utmost importance. Ward data showed that during the study period, 430 elective cases were operated. Those who developed fever within 48 hours were 100(23.2%).

However, published incidence varies widely (from 14 to 91%) depending upon how the fever was defined and the patient population of the study^{4,5,6}.

The frequency of postoperative pyrexia was on the lower side as compared to reports from African studies.^{7,8} The study population of only elective cases and time of 48 hours may explain this difference.

In this study most of the patients were young and in their productive life (between 20-40 years of age). It correlates with the literature which shows that young more commonly suffer from postoperative pyrexia. It is because the baseline temperature of the elderly is lower than in the young adults. Thus, elderly patients with severe infections may only display a modest fever⁹.

There is an indirect relationship of female gender with pulmonary complications i.e., atelectasis because of more commonly performed upper abdominal and breast surgeries in them.^{10,11,12} In this study, fever in 51% of patients was because of pulmonary atelectasis. Out of these, female cases were 38% while male 13%. It is reported in the literature that upper abdominal and thoracic surgery is the risk factor for the development of pulmonary atelectasis. In our study, majority of the patients who suffered from atelectasis had upper abdominal and thoracic surgery (Breast surgery 22%, Cholecystectomy 20%).

In our study, atelectasis was diagnosed mostly on history and clinical examination. Most common complaint in case of atelectasis was cough. On auscultation 19 patients had decreased breath sounds and only 3 patients had crepitations. Clinical diagnosis was supported with radiographic findings in 30 patients while in rest x-rays were normal. Radiographic findings were only evident in cases of massive atelectasis.

It has been concluded from other studies that upper abdominal surgery (e.g. cholecystectomy) general anesthesia and inadequate pain control are the specific risk factors of atelectasis.^{10,13} In our study, it was observed that lower abdominal procedures (e.g., inguinal hernia repairs) and anorectal surgery were not associated with the development of chest complications. Similarly, pulmonary complications were less common in patients operated under spinal or regional anesthesia.

Seventeen percent patients suffered from fever with chills. Their rest of clinical examinations were unremarkable. Blood smear for malarial parasite was positive in 9 of them and negative in 8 cases. Malaria is endemic in the study area and as reported in literature, it can be a cause of postoperative fever in endemic areas and should be investigated¹⁴.

Five percent patients were diagnosed as cases of phlebitis. Female cases were more than male. Female gender is the specific risk factor of phlebitis¹⁵. Fluids and antibiotic are other risk factors which are commonly used in postoperative period.

Thirty five percent patients were labeled to have unexplained fever. Clinical examination and investigations were unremarkable.³ Majority of the

cases observed was of inguinal hernia repair (18%) & breast surgery (8%). Anesthesia had no direct relationship with it. Most of them were young and recovered spontaneously. It has been reported that this transient, self resolving fever is because of tissue trauma.^{16,17,18,19} Tissue trauma causes release of cytokines which stimulate thermoregulatory system to induce fever. It is related to magnitude of tissue damage and is mediated mainly by IL6.

CONCLUSION

We concluded that early postoperative fever occurs frequently in a wide range of general surgery patients. Common causes are noninfectious, including mainly pulmonary atelectasis and tissue trauma. Patients with early postoperative fever should be evaluated to identify any obvious sources of infection. If no focus is identified, empiric antibiotic therapy should not be initiated nor should prophylactic antibiotics be extended for prolonged durations. Unexplained fevers will resolve in time without specific therapeutic interventions. Postoperative fever should be evaluated with a focused approach rather than in "shotgun" fashion, and it is based on the patient's history, a targeted physical examination and further studies if appropriate. As malaria is endemic in Pakistan, it should also be considered in surgical patients as the cause of fever.

Our approach in postoperative fever evaluation (based on symptoms and physical examination supported by specific investigations) remained feasible and safe. It decreases random testing and increases the yield of positive test results.

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