

## Letters to the Editor

### Post-operative wound infections. Etiology and follow-up problems

Dear Sir,

Post-operative wound infections continues to be a major source of morbidity and mortality for patients undergoing operative procedures. It may reach up to 30% in hospital acquired infections.<sup>1</sup> In order to minimize post operative surgical wound infection (SWI), it is important to create a safe environment and monitor patient risk factors. The local manifestations of wound infection includes one or more of the following: pain, erythema, induration, poor healing, dehiscence and presence of purulent drainage. Systemic manifestations commonly include fever and other signs of bacteremia. However, at least 4 factors may affect the organisms causing SWI namely, 1. Pre-operative antibacterial therapy, 2. Prolonged pre-operative hospitalization, 3. Trauma, 4. Outbreaks of nosocomial SWI. Other risk factors for (SWI) have been identified such as malnutrition, hypoalbuminemia, diabetes mellitus, elderly age of patient, obesity and infection at other sites before elective surgery. Antibiotic prophylaxis is used in surgical procedures in which the consequences of infection may be serious and costly.<sup>2,3</sup> This study was performed at the Surgical Department and Trauma Unit for emergency surgical procedure in Tripoli Central Hospital (TCH) over a 6 month period. Daily examination of wounds by an infection control nurse, were carried out, 2 swabs were taken from the suspicious wound, one for gram stain and the other for culture on standard and selective media, which, were prepared as instructed by the manufacturer. General standard diagnostic microbiological methods for isolation, identification and antibiotics susceptibility tests were carried out in the Department of Medical Microbiology, Medical School. The wounds were inspected in an outpatient clinic for any inflammation or drainage within 28 days of the operation. The post-operative wound infections were classified according to the National Research Council into 4 categories; clean, clean contaminated, contaminated and dirty.<sup>4</sup> All the information such as patients age, sex, weight, date of admission, date of discharge, clinical diagnosis, presence or absence of diabetes mellitus, malignant disease, infection at other sites and the use of prophylactic antibiotics were recorded on the worksheet. A total of 1295 patients were admitted to TCH both at the Surgical Department and Trauma Unit for emergency surgical procedure. The overall infection rate was 2%, and according to the type of the post-operative wound infections 1% clean type,

2% clean contaminated, and 3% contaminated cases. The infection rates for specific commonly performed surgical procedures is as follows: Appendectomy 6 out of 462 (1%), cholecystectomy 6 out of 349 (2%), herniorrhaphy 2 out of 268 (1%), thoracotomy 1 out of 4 (25%), others 8 out of 135 (6%). For example, the appendectomy was 3% and cholecystectomy was 2%. The result of the present study showed the low rate of wound infections. Using the type of procedure according to the wound contamination, there were 365 clean contaminated and 644 contaminated making the total cases 1295. We could not retrieve cases of dirty surgical procedure and did not include these in this study. The lack of regular follow-up of a great number of patients resulted in possible change of both the incidence and the pattern of post-operative wound infections. In comparison with a similar study in the Kingdom of Saudi Arabia,<sup>5</sup> the overall rate of infection was 9% and the rate of infection according to wound category 9.5% clean, 6% clean contaminated, 21% contaminated and 71% dirty type. This data shows a low rate of infection which may be due to many reasons. 1. The omission of the 4th category (dirty type). 2. The wide use of 3rd generation cephalosporin (ceftriaxone and cefotaxime) in combination with metronidazole as prophylactic antibiotic before the operation. 3. Many drop-out as patients during follow-up. Appendectomy is the most common major emergency procedure performed, the low rate was 3% and this reflects the use of prophylactic antibiotic. In cholecystectomy cases, the rate of infection was 2% again reflecting the use of prophylactic antibiotics and using laparoscopic cholecystectomy. The most common pathogenic isolates were *Pseudomonas aeruginosa*, *Xanthomonas maltophilia*, *Staphylococcus aureus*, *Escherichia coli* and *Klebsiella pneumoniae* (17.5%, 17.5% 15%, 12.5% and 12.5%). Also from the results, only 3 organisms were identified as gram positive *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Enterococcus faecalis* whereas the rest of the isolates were gram negative with 77.5% of the total isolates. We believe the majority of the wound infections detected and the type of bacteria isolated corresponded with the expected post-operative wound infections and were successfully treated.

**Mahjoub B. Rishi**  
**Mohamed A. Aboshkiwa**  
**Adel A. Bakir**  
Tripoli Central Hospital  
Tripoli  
Libya

### *References*

1. Damani NN, Ayliffe GAJ, editors. Prevention of surgical wound infection. In Manual Infection Control Procedures. Greenwich Medical LTD; 1997: 180-187.
2. Garibaldi RA, Cushing D, Lever T. Risk factors postoperative infection. Am J Med 1991; 91: 1585-1634.
3. Classen DC, Evans RS, Postotnik SI. The timing of prophylactic administration of antibiotics and the risk of surgical wound infection. N Engl J Med 1992; 326: 281-286.
4. National academy of Science National Research Council. Adhoc Committee of the Committee on trauma, division of Medical Sciences, postoperative wound infections. The influence of ultraviolet irradiation of the operating room and of various other factors. Ann Surg 1964; 160: (Suppl 2) 1-192.
5. Mokhtar AM, Eltahawy AT, Khalaf RM, Bahnassy AA. Postoperative wound infection: aetiology, predisposing factors and recommendation for control. Saudi Med J 1993; 14: 32-36.