ARE OUR HOSPITALS SAFE?

Pages with reference to book, From 9 To 10

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"IT MAY SEEM A STRANGE PRINCIPLE TO ENUNCIATE AS THE VERY FIRST REQUIREMENT IN A HOSPITAL THAT IT SHOULD DO THE SICK NO HARM."

Florence Nightingale[1] stated these words over a century ago but still we take minimum or no interest in this aspect. The infection acquired in hospital by a patient admitted for a reason other than that infection is termed as hospital acquired infection. Although Semmelweiss was the first to realize the importance of prevention of hospital infection, Lister[3-4] was the first to apply the basic principles of Pasteur to his own work of controlling infection in the operating room by liberal use of phenol and so initiated in 1867 an era of antiseptic surgery with a remarkable reduction in intercurrent infection and mortality.

Before the advent of antibiotics most hospital infections were due to micro-organisms of external origin e.g., Salmonellosis caused by infected food, gas, gangrene etc. or to microorganisms not present in the normal flora of the patients such as Diphtheria, Tuberculosis or any other infectious disease in the conventional sense. Now the pattern has changed and in addition to the exogenous source, micro-organisms of endogenous origin also plays a major role. These organisms constitute part of commensal flora, present in such quantities that they are not pathogenic under normal circumstances but when an antibiotic is administered, however, it acts not only on the pathogenic micro-organisms that are the target of the therapy but also on the whole of the patients personal flora which it treats selectively, creating a vacuum which is filled by other organisms of endogenous origin resistant to the antibiotic or organisms floating in hospital environment resulting in fresh infection. The main causes of hospital infections are:

1. Antibiotic therapy - specially unnecessary and prolonged, use of Broad spectrum antibiotics.
2. The increase in the number of hospitalized patients susceptible to infections such as neonates, old people, malnourished or diabetic subjects, etc.
3. Use of increasingly violent techniques for diagnostic and therapeutic purposes.
4. Increase in the number of people dealing with the same patient.
5. Increase in patients' movement within the hospital.
6. Hospital staff not adequately trained in the prevention of infections.
7. Unsuitability of architectural design and sanitary facilities.

Patients undergoing surgery are exposed to a wide variety of microbiological hazards and vulnerable to hospital acquired infections. All surgeons are faced with the problem of wound complications. Semmeiweiss died of Streptococcal sepsis which he acquired from a victim of the disease on whom he performed an autopsy[2]. The incidence depends on the type of operation, the patient's disease, conditions, the technical proficiency and judgement of the surgeon. Most large surgical services have an infection rate of about 2 to 4% in clean wound to 50-60% in a contaminated one. The rate in our hospitals is much higher as in some instances the basic principles of asepsis such as sterility of equipment etc. are not followed, environmental cleaning of operating theatres not carried out, animals have a free access in the hospitals and operating rooms, insects are a common sight even in our most sophisticated hospital. We ignore the main predisposing factors of infections which could be divided into:

Preoperative factors: Such as Hypovolemia, protein-calorie malnutrition, alcoholism, chronic corticosteroid use, remote infection, extended preoperative hospitalization and nicks and cuts from surgical preparatIon of operative site.

Intraoperative factors: Such as disregard for sepsis, poor hematosis, excess electrocautery, foreign

bodies, excessive dead space in wounds and drains through surgical incision.
Post-operative factors: Such as unnecessarily prolonged catheterization, endotracheal intubation and intravenous cannulatiQn; poor oral hygiene and inadequate nu4itional support.
Infections that follow operative procedures are an all-too-common complications in surgical patients. The spectrum of post-operative infections varies dramatically from troublesome wound infections to intraperitoneal infections that represent the major threat to patient survival. Reduction in morbidity and mortality in patients with post-operative infections can be achieved only by a thorough understanding of prevention, early diagnosis and definitive therapeutic inter-vention.
Numerous preventive measures are available to reduce the overall frequency of infections. First, careful planning and preparation can reduce both the number of potentially pathogenic bacteria and the number of systemic factors that might predispose to subsequent infection, monitoring of food and operating rooms could help a great deal in limiting Nosocomial infections. Surgeons should •be extremely careful while operating, or scrubbing the planned site of operation with any acceptable antiseptic detergent such as chiorhexidine. Patients with active infections remote from the surgical wound should have these infections treated adequately before an elective operative procedure. The duration of a patient's preoperative hospitalization should be kept to a minimum. Nutritional support by the most practical means available should achieve positive nitrogen balance and reduce potential contributions of proteincalorie malnutrition as a factor in subsequent infection complications. Furthermore, hypovolemia an anemia require preoperative correction to eliminate potential contributioLns that these variables may make to subsequent septic problems.
Meticulous attention to technical aspects such as use of three sets of instruments during the conduct of the operative procedure is of particular significance in reducing subsequent wound infection rates. Because of the foreign body effects of braided suture material, ligatures within the wound should be used sparingly.
Excessive use of electrocautery will also result in tissue injury and non-viable foci for bacterial proliferation and subsequent infection. Nevertheless, adequate hemostasis remains an important objective in surgical wound and considerable care should be exercised in achieving that goal. If excessive dead space in obese patient necessitates wound drainage, then only closed catheter drainage is considered an acceptable alternative. Penrose drains that exist through the surgical wound are simply not acceptable although they are still widely used.
Because of its anti bacterial effects, ultraviolet irradiation in the operating room has been advocated but so far it has gained limited popularity.
Prophylaxis of surgical wound infection by the use of antibiotics has achieved considerable levels of popularity and probably is, the main stay of preventing Nosocomial infection in our part of the world despite the fact that these antibiotics are often inappropriately employed for prevention. Recent studies have demonstrated that the immediate preoperative administration of a systemic antibiotic is effective in reducing surgical wound infection rates.
It is time that we realize and accept the fact that due to negligence alone, our hospitals have reached a state where we cause HARM TO THE SICK!

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