Delayed Surgical Site Infection… A Forgotten Dilemma

Aneela Afreen*, Ali Mohamed Abdelghaffar, Zeinab Osman Huwaetalla, Ramy Mohamed Elrowiny, Basit Majid Mattoo, Mohamed Ajaz Ghani

King Fahad Hospital, Madinah Cardiac Center Al-Madina al-Munawara 42351, Saudi Arabia

* Corresponding author: Aneela Afreen
Email: anilaafreen@gmail.com

ABSTRACT: Although surgical site infection is common post procedural complication, very late primary surgical site infection is extremely rare. We present here a case of young, diabetic otherwise immunocompetent patient who presented with sternal surgical site infection seven years after CABG surgery and the only precipitating factor was altered immune response secondary to recent onset of diabetes mellitus type II.

KEYWORDS: Surgical Site Infection, Diabetes Mellitus, Altered Immune Response

INTRODUCTION

Surgical Site Infections not only increase morbidity and mortality but impose a major burden of cost to healthcare facility.[1] although surgical site infections usually occur in first 30 days after surgery,[2] it is highly unusual to see a surgical site infection seven years post procedure. We presjent a case of such delayed wound infection in a diabetic otherwise healthy and immunocompetent patient who was diagnosed with diabetes mellitus type II two years ago, optimally controlled with oral hypoglycemic medications with no evidence of microvascular or macrovascular complications.

CASE REPORT

A 44-year old male, diagnosed case of Mitral valve disease of Rheumatic origin, underwent surgical replacement of mitral valve seven years ago. The procedure went uneventful with unremarkable post operative period and complete recovery. Both surgical sites (sternal and Saphenous vein harvesting site) remained absolutely healthy since surgery with no signs of local inflammation or systemic infection.

He was in his usual state of health when he noticed appearance of small boil on the lower end of sternal surgical scar site which later on not only increased in size but became progressively painful when he reported to emergency department of a tertiary care hospital with swelling and redness at scar site. On examination it was erythematous, hot, tender swelling with edema of surrounding tissues. The swelling was positive for fluctuation thus making the clinical diagnosis consistent with an abscess. His lab investigations revealed neutrophilia with toxic granulations on differential blood count and markedly elevated inflammatory markers while other systemic investigations were normal. Surgical incision and drainage were performed and the interrupted non-absorbable suture at the lower end of sternal scar near xiphoid process was taken out assuming as harbor of contaminating organism. Material drained was sent for culture which yielded the growth of Staphylococcus aureus, and treatment started with antibiotics according to sensitivity report i.e. Intravenous Tazobactam/Piperacillin and Vancomycin (no dose adjustment required) during in hospital stay while Amoxicillin/Clavulanic acid, Ciprofloxacin and Clindamycin (no dose adjustment) was prescribed on discharge. Follow up after two weeks showed satisfactory recovery. Continuation of oral antibiotics for further two weeks and daily aseptic dressing of drainage site yielded optimum results with complete recovery and eradication of infection from both surgical scar site and blood confirmed by clinical examination followed by blood cultures at four weeks.

DISCUSSION

Surgical site infection is a common healthcare issue which involves complex biological interplay at molecular level. In USA, surgical site infections account for more than two million nosocomial infections in hospitalized patients.[3] Incidence of occurrence is 15% in elective surgeries and 30% for contaminated and dirty surgeries.[4] Center for disease control and prevention has categorized surgical site infections into 3 types.[5]

1. Superficial incisional infection
2. Deep incisional infection

3. Organ/ Space infection

Post CABG surgical site infections are further classified into Primary & Secondary SSI, first being the Sternotomy and later the graft harvesting site.[6]

Risk factors for post CABG SSI includes but are not limited to advanced age, impaired blood sugar, high BMI, deranged creatinine level, peripheral vascular disease, dependence on ventricular assist device, transplant surgery and perioperative corticosteroid use.[7,8] Other risk factors, although not carrying much importance in literature but contributing in precipitation of overt SSI according to significant number of operating surgeons include transferred patient from other healthcare facility, emergency procedure, redo surgery, higher ASA score and prolong procedural time.[7,8]

Usually organism is introduced into the site at the time of surgery and remains dormant till the alteration in host response by any mean, thus causing activation of latent infection and here in our case it is the onset of diabetes, although adequately controlled, led to alteration in host response and ultimately led to abscess formation by S.aureus as no other significant precipitating factor was found. Possibilities for harboring such infection and later manifesting as an abscess can be.

1. Seedling of infecting bud on non-absorbable suture resulting in impossible eradication due to non-penetration of antibiotics into suture resulting in latent infection, reactivation by impaired host immune response and removal of suture being the only possible way of eradication.
2. The other remote possibility for such latent infection can be presence of hair follicle underneath colonized by the infecting bug and manifesting as full-blown septic phenomenon upon alteration in immune response. Considering the all possible causes, in addition to appropriately identifying precipitators, improving local sanitary measures of operating rooms, emphasizing practice guidelines directed antiseptic techniques by operating personnel, preoperative chlorhexidine gluconate (CLG) shower to patient two to four times according to its predefined protocol can prove beneficial [9], however The National Institute of Health & Care Excellence 2019 guidelines recommend against the use of preprocedural Chlorhexidine Gluconate showering due to non-significant decline in post procedural surgical site infection (SSI)[10] but only in high risk group along with nasal decontamination using Mupirocin contrary to 2016 WHO guidelines which recommend only nasal decontamination.[6] According to NCEPOD antimicrobial prophylaxis administered two hours before surgery is consistent with favorable results in reducing postprocedural SSI [11] but the choice of antimicrobial must be tailored to the prevalence of local microbial flora.

CONCLUSION

Care must be taken while performing CABG surgery to keep the procedure as CLEAN as mentioned in American College of Surgeons and Surgical Infection Society.[12]

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