Incidence and Etiology of Hemodialysis Catheter Related Blood Stream Infections at a Tertiary Care Hospital in Mumbai: A 5 Year Review

Dear Sir,

Blood stream infections (BSI’s) can cause significant morbidity in patients undergoing hemodialysis through catheters. This study aims to fill the knowledge gaps on the incidence, etiology, and antimicrobial susceptibility of hemodialysis catheter related BSI’s (CRBSI) in Indian patients.

This is a retrospective cohort study among patients undergoing regular hemodialysis through catheters at the dialysis unit of a private tertiary care hospital in Mumbai, from 2014 to 2018. CDC guidelines for preventing intravascular catheter-related infections were followed.[1] For patients with suspected blood stream infection a set of cultures were collected from the catheter, and if possible, from a peripheral venipuncture. BacTAlert3D (Biomerieux Ltd) system was used for blood culture while identification and sensitivity testing was done using Vitek compact (Biomerieux Ltd). A bloodstream infection was defined as a positive culture from the catheter with/without a positive peripheral venipuncture sample along with symptoms and signs of a blood stream infection and no other focus for fever. Standard treatment guidelines for management of CRBSI’s were followed. The outcome of the infections in terms death were noted. Following detection of CRBSIs, an audit was done to ascertain the possible cause of the infection and training and surveillance was enhanced in the unit. The incidence of infection was expressed as no of episodes per 1000 catheter days. The number of catheter days was obtained by multiplying the average number of patients with catheters undergoing dialysis every year in the unit with the number of days in that calendar year.

The dialysis unit at the study site is a 37-bedded unit. On an average one out of three patients undergoing dialysis had catheters [Table 1]. There were a total of 109,929 catheter days of follow-up in the study period. 20% of patients had temporary percutaneous catheters, while 80% had permanent tunneled catheters. There were 40 episodes of CRBSI of which 20 occurred in those with temporary catheters and 20 in those with permanent catheters. The overall CRBSI rate was 0.36/1000 catheter days. The variation in the yearly rate is depicted in Table 1.

The age group of the patients with BSI varied from 45 years to 86 years. 42 organisms were isolated from 40 episodes of infections (two infections were due to two organisms each). Of these, 25 (60%) were gram positive, 16 (38%) were gram negative and 1 (2%) was Candida. Of the 25 gram positive isolates, 10 were S.aureus [7 methicillin sensitive S.aureus (MSSA) and 3 methicillin resistant S.aureus (MRSA)], 11were Coagulase Negative Staphylococci (CONS) (1 methicillin sensitive and 10 methicillin resistant), 3 were Enterococci and one Kokuria kristina. Of the 16 gram negative isolates, 11were enterobacteriaceae (2 E. coli, 2 Klebsiella, 3 Enterobacter, 3 Serratia and 1 Proteus), 4 non-lactose fermenters (3 Acinetobacter and 1 Pseudomonas) and one Ralstonia. The average susceptibility of gram negative isolates to amikacin was 62%, ciprofloxacin 68%, beta lactam-beta lactamase inhibitor (BL-BLI) combinations was 80%, while to the carbapenems was 87.5%. The single isolate of Candida was C.parapsilosis and it was fluconazole susceptible. 4 patients with CRBSI died with a crude mortality of 10%.

The incidence rate of CRBSI reported in this study is substantially lower than that reported earlier in an Indian study (5.37-6.5 per 1000 catheter days) as well as from older international studies (3.5-5/1000 catheter days).[2] In fact, the rate reported in this study approximates rates reported from developed countries; a recent prospective study from Alberta, Canada reported this rate as 0.19/1000 catheter days.[3] Understandably enough, the incidence of CRBSI in study patients with temporary catheters was higher than those with permanent catheters.

The microbial etiology of CRBSI in the current study showed predominance of gram positive organisms like most Indian studies.[2] While most of the S.aureus isolates were methicillin sensitive, the vast majority of the CONS were methicillin resistant. The gram negative isolates displayed significantly less antimicrobial resistance as compared to gram negative isolates causing CRBSI in adult ICU patients with percutaneous CVC at the same

Table 1: Incidence of CRBSI from 2014 to 2018

| Year | Average number of patients undergoing dialysis | Average number of patients with catheters undergoing dialysis | Total number of catheter days | No of CRBSI | Incidence of CRBSI/1000 catheter days |
|------|-----------------------------------------------|-------------------------------------------------------------|-----------------------------|------------|---------------------------------------|
| 2014 | 197                                            | 60                                                          | 21900                       | 9          | 0.41                                  |
| 2015 | 210                                            | 61                                                          | 22265                       | 6          | 0.27                                  |
| 2016 | 208                                            | 64                                                          | 23424                       | 8          | 0.34                                  |
| 2017 | 185                                            | 59                                                          | 21535                       | 13         | 0.6                                   |
| 2018 | 190                                            | 57                                                          | 20805                       | 4          | 0.2                                   |
| Total|                                               |                                                             | 109929                      | 40         | 0.36                                  |
Shah S, Singhal T, Naik R, Thakkar P. Determinants and outcomes of access-related A 5 year review. Indian Website:

A Rare Case of Hypertension in a Young (Fe)male

We report a case of a 32-year-old female patient who was reported in 1966 by Biglieri cases. It is a rare form of CAH, with an estimated incidence of 1 in 50,000–100,000 individuals, and represents ~1% of all CAH. 17 alpha Hydroxylase deficiency is a rare form of CAH, resulting from defects in various enzymes in the pathway of steroidogenesis. The most common form of CAH is 21 alpha hydroxylase deficiency. 17 alpha Hydroxylase deficiency is

Congenital adrenal hyperplasia (CAH) is a syndromic disease presenting with the chief complaints of weakness of She had poorly developed secondary sexual characters (B1) and 74 kg (BMI: 23.4 kg/m²). She had no significant past history except for not attaining menarche and was diagnosed with atrophic uterus by a gynecologist during her childhood.

A Rare Case of Hypertension in a Young (Fe)male

There are no conflicts of interest.

Conflicts of interest

There are no conflicts of interest.

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