Background: Central venous access devices (CVAD) are essential for long term intra-venous treatment of malignancies and other conditions. Catheter-related infections (CRI) complicate long term CVAD use at rates between 1.5-5%, resulting in significant morbidity and mortality. Current evidence does not support a role for antibiotic prophylaxis pre-insertion. Our aim was to determine rates of CRIs complicating CVAD insertions by vascular surgery and interventional radiology in a single institution and examine the role of antibiotic prophylaxis in prevention.

Methods: A retrospective audit was carried out on CVAD insertions (tunneled central venous catheter (CVC) or subcutaneous port) by the Vascular Surgery and Radiology Departments at a tertiary teaching hospital in Sydney, Australia from January 2014 to December 2017. Data were collected on patient demographics, antibiotic prophylaxis, skin preparation and CRIs. Rates of CRIs were compared by Chi-Square test (α 0.05).

Results: 122 (22 tunneled CVC; 100 subcutaneous ports) and 315 (32 tunneled CVC; 283 subcutaneous ports) CVAD insertions were performed by vascular surgery and radiology respectively. Median age was 56 years (IQR 47-66) in the vascular cohort and 62 years (IQR 51-70) in the radiology cohort. Females were predominant in both vascular (89; 73.0%) and radiology (169; 53.7%) cohorts and the most common indication was chemotherapy (vascular 99; 81.1% and radiology 290; 92.4% n=1 missing). Antibiotic prophylaxis was used in 112 (91.8%) vascular insertions but only 10 (3.2%) insertions by radiology. Povidone iodine skin preparation was preferred for vascular insertions (119; 99.2%, n=2 missing) compared to chlorhexidine for radiology insertions (304; 97.4%, n=3 missing). CRIs occurred in 5 (4.1%) of the vascular cohort and 11 (3.5%) of radiology cohort (P=0.76). There was no evidence to support antibiotic prophylaxis in prevention of CRIs, although choice of skin preparation and other factors may have confounded findings.

Discussion

Catheter related infections (CRI) within 30 days of insertion:
- Superficial site infection (SSI) confirmed on superficial sample
- Deep site infection (DSI) confirmed on deep sample or tip culture
- Bacteraemia
- Clinical CRI diagnosed and treated with antibiotics and/or line removal
- Line removed with no other indication for removal documented +/− suspected infection

There was no evidence to support the use of antibiotic prophylaxis in prevention of CRIs in CVAD insertion. Antibiotic prophylaxis use remains common in some settings, indicating that further research may be required to inform changes in practice.

References


Acknowledgements: STGH Radiology Department, STGH Vascular Department, STGH Medical Records, Dr Sami Islam, Dr Gabriel Tan, Dr Adrien Tchen, Ms Jody Walsh