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Introduction

• Catheter-related bloodstream infections (CRBSIs) are the fourth most common type of healthcare-associated infection.1
• CRBSIs are associated with high morbidity and mortality as well as increased medical care costs. The estimated cost per CRBSI is $25,000 to $45,000.1
• Cancer patients, who are often immune-compromised, are more susceptible to CRBSI while receiving parenteral nutrition (PN).1
• Incidence of CRBSI in the oncology population has ranged from 0.35 to 5.36 per 1,000 catheter days, depending on the neutrophil status of patients.2
• The most recent study from Italy by Cotogni had the lowest reported incidence of CRBSI (0.35/1,000). However, only half of their patients were receiving active oncologic treatments during the study period.2
• The impact of standardized catheter care on the reduction of CRBSI has been well-established in patients receiving PN with a variety of diagnoses.3
• Very few studies have quantified the rate of CRBSI in patients receiving active oncologic treatment while on home parental nutrition (HPN).

Our objective for this study was to quantify the impact of following a comprehensive, standardized catheter care protocol on the incidence of CRBSI in oncology patients on HPN who were receiving anti-cancer therapies.

Methods

• A retrospective, non-randomized analysis of 116 adult oncology patients was conducted. The patients were receiving HPN from Coram Specialty Infusion Services and active treatment at the Cancer Treatment Centers of America® (CTCA) between January 1 and December 31, 2012.
• Data collected included demographics, catheter type, dwell days, cancer stage, clinical data, and length of PN therapy.
• A.S.P.E.N. guidelines were used to determine PN indication. Patients were managed by 12 different branches of the home infusion company across the country. Patients received detailed pre-discharge teaching by a team of hospital and home infusion nurses, registered dietitians, and a dedicated case manager prior to going home with PN.
• Patients in the study were followed using a specific catheter care protocol that included: a strict aseptic flushing and dressing change procedure; weekly sterile dressing changes with use of Chloraprep®; and the application of MicroClave® connectors and SwabCaps® on all lumens that were not in use.
• A weekly assessment was performed that provided details about the patients’ clinical status, compliance with catheter care and HPN, and catheter status. Printed materials and custom multimedia videos were used to reinforce infusion technique and patient/caregiver compliance with catheter maintenance protocol.
• Following the CDC definition of CRBSI as bacterial or fungal infection in a patient with a central line when no other site is infected with the same organism, CRBSIs were reported to the home infusion provider nurse and documented in the medical record.
• Catheter dwell days ranged from the start date with the home infusion provider, until the catheter was removed or the patient ended service with the home infusion provider.

Conclusions

• Little U.S. comparative data with a wide range of reported results exists on the rate of CRBSIs in HPN patients with a cancer diagnosis who are actively undergoing oncologic treatment (Table 2).
• This study indicates that following a standardized catheter maintenance protocol that includes intensive instruction from clinicians and weekly clinical and compliance assessments can minimize the incidence of CRBSIs in a high-risk oncology population undergoing active oncologic or anti-cancer treatments.
• This data can also serve as a benchmark for potential use by other hospitals in preventing CRBSIs in patients on HPN.

Results

• Of 116 patients, 72 were females (62%) and 44 were males (38%), with an age range of 24 to 85 years. Fifty-three patients were analytic (newly diagnosed patients and/or patients who had received their first course of treatment at CTCA), while 63 were non-analytic (patients who had already been diagnosed, and whose first course of treatment was completed elsewhere before they came to CTCA). The study totaled 6,186 dwell days and included 116 catheters.
• The average length of therapy was 53 days. Sixty-six (57%) of the patients had implanted ports, 46 (40%) had PICCs, and 4 (3%) had tunneled catheters (Table 1).
• The most common cancer types were colorectal (25%), pancreatic (23%), and gynecological malignancies (22%). Sixty-six percent of the patients had advanced stage cancer (stages 3 and 4), while 10% had an unknown stage.
• The incidence of CRBSIs was 0.48 per 1,000 catheter days. Catheter infections were confirmed in three patients, two with ports and one with a tunneled catheter.

References