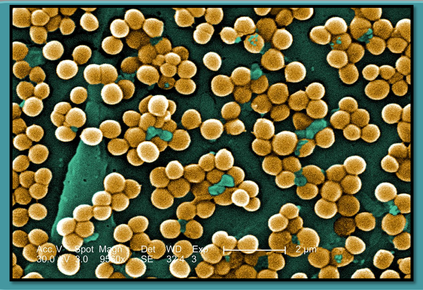

Patients with Acute Leukemia, Neutropenia and the Presence of a Central Line in Patients that Develop Bacteremia: A Retrospective Case-Control Chart Review

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Background/Setting

- Bacterial bloodstream infections are among the most frequent complications in leukemic patients due to prolonged neutropenia
- Grant 6 is a 51-bed acute care respiratory/oncology medical-surgical unit at Northern Light Eastern Maine Medical Center (NLEMMC) that has experienced several reported cases of central line-associated bacteremia since 2017
  - Most with acute leukemia who have undergone induction chemotherapy
- Over the past three years, Grant 6 has experienced a loss of nurses with greater than two years of experience in oncological care. Several nurses with certification in oncology (OCN) transferred to the outpatient setting.
- Oncological patients previously separated to one hallway are currently located in any bed available on Grant 6

Research Aims

- Aim #1: To examine for significant differences in demographic and patient profile between Case and Control groups
- Aim #2: To examine for significant differences in lab values between Case and Control groups
- Aim #3: To examine for significant differences in demographic and patient profile between Case and Control groups in patients with mucosal barrier (MBI) bacteremia
- Aim #4: To examine the relationship between the changing dynamic of an acute care medical-surgical unit (e.g. geography, staff turnover, skill mix) and bacteremic rates in patients with central lines?

Methods

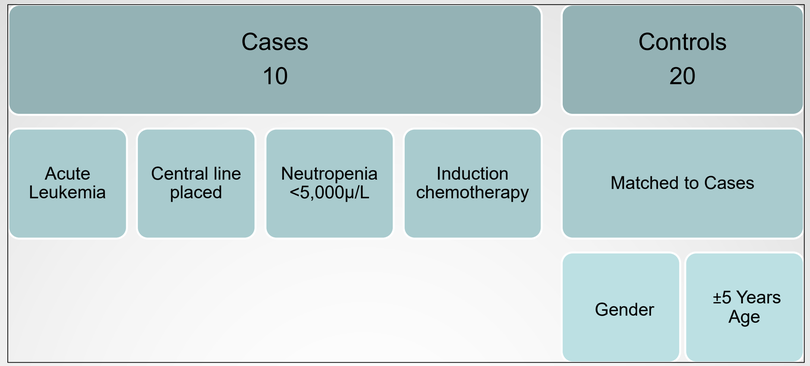
Retrospective Case/Control Design

- Chart review
- Oncological patients admitted from 1/2017-2/2020
- Cases-those that developed bacteremia during admission
- Controls-those that did not develop bacteremia during admission
- Excluded patients under the age of 18

Unit Data from 2017-2019

- Unit structure
- RN turnover
- Non-OCNs in unit
- New graduate RNs in unit

Sample Inclusion Criteria



Variables

Variables	Variables	Variables
Age at diagnosis	Cognitive impairment	Organism listed as cause of bacteremia
Type of leukemia	Immunological disorders	Type of chemotherapy
Gender	Pressure injury	Number/site of cultures
Ever smoked	Presenting symptoms (e.g., flulike, dental, fatigue, SOB)	Nutritional intake 72/48/24 hours pre nadir time
Living situation	Immunological disorders	Nutritional intake 72 hours post nadir time
Home medications	Type of CL catheter	Nutritional consult
Length of stay	Day/time when CL was placed	Oral symptoms around nadir time
Diabetes mellitus	Number of encounters	PI around nadir time
COPD	Lab values on admission • ANC • Hgb • Plt • Protein /albumin • Uric acid • LDH	Patient received CLABSI education
Cardiovascular disease	Lab value at nadir time	Home service arrangements
Hypertension	Blood products	Line maintenance bundle compliance
Arrythmia	Encounter of bacteremia development	Insertion bundle compliance
Mobility limitations	Temperature at time of blood culture	Chlorohexidine bath compliance

Preliminary Results

Data Collection is Ongoing

Cases (n=10)	
Variable	Results
Age	56.6 years (mean)
Type of Leukemia	AML (90%) ALL (10%))
Gender	Female (60%) Male (40%)
Currently or Previously Smoked	Yes (90%) No (10%)
History of Diabetes Mellitus	Yes (10%) No (90%)
LOS Admission to Discharge	32.8 days (mean)
Most Frequent Presenting Symptom	Fatigue (80%)
Temperature on Admission	36.7 (mean)
Type of CL Catheter	Hickman (70%) Port (10%) PICC (20%)
Type of Chemotherapy	7 & 3 (70%) R-Hyper-CVAD (10%) MEC/IT Cytarabine & IT MTX (10%) Other (10%)
Lab Values on Admission • LDH • ANC • Hgb • PLT • Protein • Albumin • Uric Acid	Mean Values • 397 U/L • 3,576/mm3 • 9.4 g/dL • 47,203 mm3 • 6.7 g/dL • 3.75 g/dL • 4.39 mg/dL
Lab Values post Nadir • Hgb • PLT • Protein • Albumin	Mean Values • 7.81 g/dL • 16,800 mm3 • 6.24 g/dL • 3.21 g/dL
Organisms Cultured with Bacteremia	• *E. coli* (30%) • Viridans streptococci (20%) • MRSA • *Candida Albicans* • *Klebsiella pneumonea* • *Streptococcus agalactiae* • *Enterococcus faecium*

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