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CRC Report
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Risk Assessment in Pediatric Cancer Patients Presenting with Febrile Neutropenia

A. Study Purpose and Rationale

Fever and neutropenia (FN) are a common complication in children who receive chemotherapy for treatment of cancer. Traditionally, children with malignant disease who develop fever with an ANC<500 cells per mm^3 require hospitalization with parenteral antibiotics. The establishment of this practice was based on the seminal study by Bodey et al in 1966 indicating that an ANC<500 cells per mm^3 in 52 adult leukemia patients with a fever conferred a high risk of bacteremia. To this day, the standard treatment for FN includes inpatient hospitalization and IV antibiotics until patients are afebrile, have negative cultures and there is evidence of bone marrow recovery. For a select low-risk subset of FN patients, a less invasive and less expensive strategy may be both safe and desirable. Clear guidelines for outpatient management of fever and neutropenia in low risk patients exist for adult patients; however published pediatric guidelines are restricted to institutional experience and therefore are not applicable to all settings. There exist risk factors that correlate with the likelihood that children with fever and neutropenia will develop serious or life-threatening infection. Outpatient management of low-risk children with FN is safe and leads to significant financial saving.

B. Study Design and Statistical Procedures

This is a retrospective, single-site cohort study of patients with febrile neutropenia treated at the Children's Hospital of NY. The cases will be those FN patients with documented bacteremia and the controls will be those FN without bacteremia. Data from 15 pediatric oncology patients who were treated outpatient or inpatient at CUMC for febrile neutropenia have been reviewed. We are increasing our accruals to 400 to cover all patients from 2006-2012 based on 80% power calculations. Medical record numbers (MRNs) will be used for data collection only. Once data collection is complete, MRNs will be removed to de-identify the data prior to analysis. Primary outcome is bacteremia. Other outcomes studied include other microbiologically diagnosed infection, serious medical complication (SMC) and death. Descriptive statistical analysis will be used to determine clinical outcome and characteristics of these patients. Multiple logistic regression will be used to create a prediction model.

C. Study Procedures

Charts of 400 pediatric oncology patients treated for neutropenia will be reviewed for abstraction of selected information including age, sex, underlying diagnosis, overall clinical condition, total white blood cell count, absolute neutrophil count, absolute phagocyte count, result of cultures from blood, urine or other body fluids, documentation of clinical infections, antibiotics used. Patient identifiers will be removed once data is extracted from paper charts, Eclipsys, Webcis, and Crown for aggregate analysis. As this is a retrospective study, no diagnostic or treatment procedures will be performed on the patients.

D. Study Drugs or Devices

No drugs will be given to patients on this study. No medical devices will be used on patients on this study.

E. Medical Device

No medical device will be used.

F. Study Questionnaire

Not applicable

G. Study Subjects

Subjects of this study will be pediatric patients being treated for a malignancy that present to clinic or the emergency room with fever (two consecutive T ≥ 100.4 ^{0}F in 1 hour or one-time T ≥ 101 ^{0}F) and neutropenia (ANC < 500 cells/mm3). Fever must have occurred while the patient was an outpatient. Exclusions include fever developed during inpatient admission, febrile neutropenic episodes due to bone marrow involvement by the disease itself (i.e. at the time of diagnosis) or following a myeloablative therapy (i.e. during recovery from induction) and history of stem cell transplantation.

H. Recruitment of Subjects
Because this is a retrospective chart review, there is no method of recruitment for this study.

I. Confidentiality of Study Data
Access to patient medical records will be according to institutional guidelines. Patient data will be coded without personal identifiers. The anonymously coded data will be stored together with the corresponding medical record number, in a password-secure database. Both the database and the computer where the database is installed are password protected. The computer is stored in a locked room. Any publication of information related to patient related material will not include any identifying data.

J. Potential Conflict of Interest
No disclosures

K. Location of the Study
The charts of pediatric patients with cancer treated for fever in the outpatient clinic on Irving Pavilion 7th floor, in the Children's Hospital Emergency Department or in the inpatient unit on 5 Tower of the Children Hospital will be reviewed.

L. Potential Risks
There are no risks other than disclosure. This is addressed by anonymously coding the samples and by storing the code and the corresponding medical record number in a password protected database. Both the database and the computer where the database is installed are password protected. The computer is kept in a locked room.

M. Potential Benefits
This research is not designed to help the patient directly, although it may in the future. It may also benefit others.

N. Alternative Therapies
This is not a clinical trial involving therapy, therefore alternatives are not applicable.

O. Compensation to Subjects
No compensation will be offered to subjects participating in this study.

P. Costs to Subjects
No costs will be charged to the study subjects.

Q. Minors as Research Subjects
This study will include minors.

R. Radiation
Not applicable

8. Informed Consent Process
There is no informed consent process since this is a retrospective chart review. Waiver for consent obtained.

10. Privacy Protections
Patient identifiers will be removed prior to analysis.

16. Data and Safety Monitoring
Not applicable for the chart review.

17. Research at External Sites
There will be no research done at non-CU sites for this study.