

PICC lines in patients with chronic kidney disease and cancer: What are we saving the vein for?

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Clinical Problem

Vascular access devices (VADs) are vital in cancer treatment for intravenous infusion of fluids like vesicant drugs, parenteral nutrition, frequent blood testing, and blood transfusion. A peripherally inserted central catheter (PICC) is one type of VAD popularly used for vascular access among cancer patients. A PICC line is generally not recommended for patients with an eGFR that is lower than 45 mL/min/1.73 m² with a diagnosis of chronic kidney disease (CKD) stage 3b or higher for the purpose of vessel preservation for possible future AV Fistula need. The study attempts to explore if the competing risk of death or progression to kidney failure among patients with cancer should be considered in evaluating the appropriateness of PICC placement.



Figure 1. Photo of a PICC

Design

Retrospective Study. Using an institutional electronic health record (EHR), patients with eGFR <60 ml/min 90 to 180 days before and after a PICC placement from 2018 to June 2021 were selected using CPT codes. Demographics and characteristics of patients were identified including type of cancer. Outcome: Proportion these patients died of cancer vs progressed to renal failure requiring dialysis.

Results

Table 1

Sample Percentage Distribution

Characteristic	Mean/Number	Percentage
Caucasian race	35	65%
Male gender	40	72%
Lymphoma, leukemia and stem cell	27	50%
CKD stage 3	44	80%
Died	26	47%
ESRD	4	7%

A total of 55 patients were included in the study, 44(80%) were CKD stage 3, four (7.27%) were CKD stage 4, and seven (12.73%) were CKD stage 2 before PICC insertion. Patients were followed 90 to 180 days after PICC insertion. Of the total 55 patients, 26 (47.3%) died, 20 (36.4%) continued cancer surveillance, 3(5.45%) kept appointments outside, and 6(10.9%) were lost to follow-up. Of the 55 patients, only 4 (7.27%) underwent dialysis after progressing to renal failure. Primary cancer diagnosis of patients who had dialysis and died were diverse which include lymphoma, colon cancer, and sarcoma.

Conclusions and Implications

- PICC lines should be allowed in patients with cancer and CKD stage 3 and beyond as the risk of ESRD is significantly less than risk of progression of cancer or death.
- Based on the results of the study, future research and practice need to evaluate current guidelines in appropriateness of PICCs among patients with cancer and CKD.