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Factors affecting the eradication of catheter-related bloodstream infection in patients receiving home parenteral nutrition

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Catheter-related bloodstream infection (CRBSI) is a fatal and common complication of home parenteral nutrition (HPN), which can be treated by antibiotics via the central venous catheter or catheter removal. However, there is no information on different factors that can affect the treatment success of CRBSI, including the number of antibiotic days.

This is a retrospective study of CRBSI in HPN patients between 1 January 2006 and 31 December 2007. CRBSI was classified as definite (pyrexia with positive central cultures) or probable (pyrexia with only positive peripheral cultures and appropriate treatment response). For each CRBSI the following data were recorded: age; location (inpatient or outpatient); aetiology; intestinal anatomy; presence of fistula; opioid analgaesic; infective organism; type of care (self or nursing); duration of antibiotic treatment. Eradication was also noted for each episode of CRBSI, where eradication was defined as no further CRBSI within 6 months with the same or a different organism.

A total of 220 CRBSI in 127 HPN patients were recorded and exclusion due to incomplete data or catheter removal left eighty-six definite and twenty probable CRBSI (sixty-six patients, median age 54 (range 21–80) years; two females:one male). The average eradication rate was 61.3% for both definite and probable CRBSI. There was a significant difference in eradication rate according to the infective organism ($P < 0.0001$; $P = 0.007$ after excluding organisms with low frequency). Eradication rates according to organism genus are shown in the Table. All other factors did not show significance.

Organism	Total no. of eradicated CRBSI	Eradication rate (%)
Coagulase-negative Staphylococcus	31 (24)	77.4
Others (Gram negative)	9 (3)	33.3
Klebsiella	28 (11)	39.3
<i>Escherichia coli</i>	9 (6)	66.7
Others (Gram positive)	22 (16)	72.7
Multiple	3 (2)	66.7
Candida	1 (0)	0
Unknown	3 (3)	100

In conclusion, CRBSI eradication is dependent on the organism type, especially Klebsiella. Improved treatment protocols should therefore be considered for all Klebsiella CRBSI.