RISK FACTORS FOR COMMUNITY ONSET CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTIONS (CO-CLABSI) IN PEDIATRIC ONCOLOGY PATIENTS

S. Papachristidou¹, I. Kopsidas², M. Baka¹, A. Pourtsidis¹, E. Kourkouni², G.C. Tsopela², M. Tsolia³, S. Coffin⁴, T.E. Zaoutis², N. Spyridis³, D. Doganis¹.

¹"P. & A. Kyriakou" Children's Hospital, Oncology Department, Athens, Greece. ²Center for Clinical Epidemiology and Outcomes Research, CLEO, Athens, Greece. ³National and Kapodistrian University Athens, Pediatric Infectious Diseases Unit- 2nd Department of Pediatrics, Athens, Greece. ⁴The Children's Hospital of Philadelphia, Division of Infectious Diseases- Department of Pediatrics, Philadelphia, USA.

BACKGROUND

CLABSI (Central line associated bloodstream infection) is a well described complication linked to higher morbidity, mortality, longer length of stay and higher costs in childhood cancer patients. Although CLABSI management is well studied, there is paucity of data on bloodstream infections (BSIs) in ambulatory oncology patients (Community onset CLABSIs:COCLABSIs). Our aim was to identify risk factors for the development of COCLABSI

METHODS

We conducted a case-control(1:2) study at a pediatric oncology hospital in Athens, Greece (12/2015-12/2017).

Cases were defined as all patients

- with a central line(CL) and
- a BSI within 48 hours of admission
- without a secondary focus of infection.

Controls were selected from patients that visited the outpatient clinic (OC) the same day. Clinical and demographic characteristics including type of CL, time since placement, underlying disease, number of OC visits and the number of times the CL was accessed the week prior to hospital admission, were recorded.

Associations were evaluated using the chi-square test of independence and the Mann-Whitney test.

RESULTS 31 cases and 56 controls were identified.

Univariate analysis showed that factors found to be correlated with a higher probability of a COCLABSI were

- Acute non lymphoblastic leukemia (AnLL) (88.89%) Vs. other cancer type,p=0.002)
- double lumen CL (42.62%) Vs. single,p=0.014
- neutropenia (50.00%,p=0.007) (Table 1).

Conditional multivariate logistic regression revealed that

- AnLL patients are 38 times more likely to develop a COCLABSI (95%CI 1.87-772,p=0.018),
- patients with a double lumen CL 27 times (95%CI 1.71-431,p=0.019) and
- Neutropenia increases risk by 5 times (95% CI 1.11-24.02,p=0.036).

Table 1. Prognostic factors for a Community Onset Central Line Associated Bloodstream Infection

		Controls		Cases		
Cancer Type		N	%	N	%	p-value
	ALL	29	69.05	13	30.95	0.002
	ANLL	1	11.11	8	88.89	
	Solid tumor	27	72.97	10	27.03	
Central Line Type						
	Tunneled single	22	84.62	4	15.38	0.014
	Tunneled double	35	57.38	26	42.62	
Neutropenia						
	No	35	77.78	10	22.22	0.007
	Yes	20	50.00	20	50.00	
Visit Variables						
		N	Median (IQR)	N	Median (IQR)	p-value
	Visits last week	57	3 (2-4)	31	3(3-4)	ns
	Days from last visit	58	2 (1-3)	30	1.5(1-3)	ns
	Number of accesses to catheter on the last visit	58	1 (1-2)	31	2(1-2)	ns
	Nurse to Patient Ratio	48	0.14 (0.12-0.19)	26	0.13 (0.11-0.18)	ns

ALL: Acute Lymphoblastic leukemia, ANLL: Acute non-Lymphoblastic Leukemia, ns: non significant

CONCLUSIONS

Acute non-Lymphoblastic Leukemia, double lumen catheter and neutropenia increase the likelihood for a COCLABSI in univariate and multivariate analysis. Collaborative studies are needed to increase sample size in order to validate these results and possibly identify other significant factors.

ESP18-0796