GROUP A STREPTOCOCCAL DISEASE IN PAEDIATRIC INPATIENTS: A EUROPEAN PERSPECTIVE

L. Atkins, N. Boeddha, M. van der Flier, G. Driessen, J.A. Hazelzet, R. de Groot, W. Zenz, E.D. Carrol, S. Anderson, F. Martinon-Torres, J. Herberg, M. Levin, L. Schlapbach, M. Emonts, on behalf of the EUCLIDS consortium

Background

Group A Streptococcal (GAS) disease shows increasing prevalence worldwide. We characterized children admitted with GAS infection to European hospitals and studied risk factors for severity and disability.

Methods

Prospective, multicenter, cohort study (embedded in EUCLIDS) including children, aged 1 month to 18 years, admitted to hospital in 43 hospitals from 6 European countries between July 2012 and January 2016. Demographic, clinical, microbiological data and outcomes were collected.

Results

209 (61%) of 342 patients diagnosed with GAS infection had sepsis as compared to a focal infection. The proportion of patients with sepsis was higher in PICU than non-PICU patients (n=122 (79%) vs n=87 (47%), $p<0.001$). 247 (72.2%) of patients had GAS detected from a normally sterile site. The most common infections included respiratory, skin and soft tissue (SSTI), and bone and joint infections (Table 1). LRTI and infection without a focus were more common in patients admitted to PICU. SSTI and bone and joint infections were most common in patients not requiring PICU. Patients admitted to PICU were younger than those on the wards. Five patients (2%) died. Sequelae at discharge were largely limited to patients admitted to PICU (24 vs 2%, 13% overall) and included neurodisability, amputation and skin grafts (Figure 1). Age was not associated with outcome.

Conclusions

In an era where we see a marked reduction in vaccine preventable infections, GAS infection remains on the rise, and for those patients requiring hospital admission is associated with significant short and long-term morbidity, with most severe disease in the younger children. Research efforts should aim at prevention, early recognition, and improved treatment of invasive GAS disease.

Figure 1. Outcome

Table 1. Characteristics of children admitted for GAS infection

	All patients (n=342)	No PICU admission (n=187)	PICU admission (n=155)	P
Sex (male n, %)	176 (52%)	95 (51%)	81 (52%)	0.79
Age (n=339) (IQR)	47m [27-84]	58m [36-86]	40m [20-82]	0.005
Time interval onset symptoms to hospital admission (days)	3 [1.8-6.0]	3.25 [1.8-6]	3.0 [1.9-6]	0.772
Time admitted to hospital (days)(n=322)	11 [6-18.5]	8 [4-13]	17 [11-27.3]	<0.001
Immunizations up-to-date (n=239)	227 (66%)	115 (62%)	112 (72%)	0.11
PICU free days at day 28 (n=337)		28	23 [18-25.3]	<0.001
N of underlying conditions				0.1
None	219(64%)	117 (63%)		
1	82 (24%)	52 (28%)		
≥2	41(12%)	18 (10%)		
Congenital or genetic defect	18 (5%)	4 (2%)	14 (9%)	0.004
Primary infection site				<0.001
None	49 (14%)	15 (8%)	34 (22%)	
Lower respiratory tract	74 (22%)	15 (8%)	59 (38%)	
Skin/Soft tissue	80 (23%)	55 (29%)	25 (16%)	
Bone/joint	62 (18%)	54 (29%)	8 (5%)	
Upper respiratory tract	47 (14%)	36 (19%)	11 (7%)	
Intracranial	25 (7%)	9 (5%)	16 (10%)	
Peritoneal	3 (1%)	1 (1%)	2 (1%)	
Renal	2 (1%)	2 (1%)	0	
Illness severity				<0.001
Max CRP (n=263, mg/L)	185 (81-285)	119 (62-227)	256 (150-329)	