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## Stewardship Opportunities for Cervical Lymphadenitis and Deep Neck Space Infections

Aaron Shaw

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Aaron Shaw MD, Brian Lee PhD, MPH, Lauren Kazmaier, Emily Baker, Tina Dao, Sandra Arnold, MD, MSc, FAAP, FPIDS, Angela Myers MD, MPH, FAAP, FPIDS

Title: Stewardship Opportunities for Cervical Lymphadenitis and Deep Neck Space Infections

Background: Cervical lymphadenitis (LAD) and deep neck space abscesses (DNSA) are common pediatric infections caused by similar bacteria. We sought to determine differences in presentation, diagnosis, and treatment between LAD and DNSA to identify antimicrobial and diagnostic stewardship opportunities.

Methods: Charts were obtained using ICD9/10 codes for retropharyngeal and parapharyngeal abscessed (DNSA), and LAD between 1/1/10-12/31/20 from two pediatric centers. 1981 charts were identified. Charts were excluded if the diagnosis was not a bacterial infection (e.g. Kawasaki disease), if the LAD was not in the neck, or if caused by less common bacteria (e.g. tuberculosis). Data on presenting signs, symptoms, imaging, microbiology results, antibiotics, and surgical interventions were collected. Statistical analyses between LAD and DNSA groups were performed with Fisher's exact and Wilcoxon rank-sum tests.

Results: 1432 patients met inclusion criteria; 767 patients with LAD, 665 with DNSA. Median age and gender differed between LAD and DNSA, but no difference was seen in race between groups (Table). Presenting symptoms were different between groups ( $p < 0.0001$ ) (Figure). Almost all patients in the DNSA group received a CT scan, compared to 69% in the LAD group. Only 8% in the DNSA group had an ultrasound, in contrast to 50% in the LAD group. Most patients in both groups had a blood culture obtained; these were negative in  $\geq 95\%$  of all cases. Abscess cultures in the LAD group more commonly grew *S. aureus*, while *S. pyogenes* was more common in the DNSA group. Clindamycin was the most common antibiotic utilized; 91% of LAD, 87% of DNSA. Most patients received  $\geq 2$  antibiotics; 81% of DNSA and 63% of LAD (Table).

Conclusions: These data may be used to help target diagnostic and treatment stewardship interventions for DNSA and LAD. Ultrasound alone may be sufficient for some cases of LAD, and CT reserved for DNSA when suspected based on presenting signs and symptoms. Routine blood cultures appear to be unnecessary for these patients. Multiple antibiotics are used to treat LAD when a single antibiotic may be more appropriate, given the prevalence of Gram positive organisms that would likely respond to clindamycin.

Table	LAD (N=767)	DNSA (N=665)	P
Age (in years_	2.0 [1.0, 4.6]	4.0 [1.9, 6.4]	<0.0001
Gender (Male)	409 (53.3%)	402 (60.5%)	0.008
Race			0.026
-Black	338 (44.1%)	253 (38.05%)	
-White	310 (40.4%)	315 (47.4%)	
CT Scan	529 (69.0%)	657 (98.8%)	<0.0001
Ultrasound	377 (49.5%)	54 (8.2%)	<0.0001
Blood Culture:	N=492 (64.2%)	N=424 (63.8%)	0.05
-Negative	480 (97.6%)	403 (95.0%)	
Abscess Culture:	N=280	N=331	
-Negative	55 (19.6%)	63 (19.0%)	0.918
- <i>S. pyogenes</i>	34 (12.1%)	121 (36.6%)	<0.001
-MRSA	92 (32.9%)	48 (14.5%)	<0.001
-MSSA	78 (27.9%)	27 (8.2%)	<0.001
Antibiotics:	N=762	N=664	<0.0001
1	283 (37.1%)	129 (19.4%)	
2+	479 (62.9%)	535 (80.6%)	
Clindamycin used	696 (91.3%)	588 (88.6%)	<0.0001

