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Stewardship Opportunities for Cervical Lymphadenitis and Deep Neck Space Abscesses

Aaron Shaw

Children's Mercy Kansas City

Brian R. Lee

Children's Mercy Kansas City

Lauren Kazmaier

Emily Baker

Tina Dao

See next page for additional authors

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Submitting/Presenting Author

Aaron Shaw, Brian R. Lee, Lauren Kazmaier, Emily Baker, Tina Dao, Sandra Arnold, and Angela Myers

INTRODUCTION

- Cervical lymphadenitis (LAD) and deep neck space abscesses (DNSA) are common pediatric infections caused by similar bacteria.
- There are no standardized guidelines available to guide diagnosis and antibiotic therapy, resulting in variation between and within institutions
- We sought to determine differences in presentation, diagnosis, and treatment between LAD and DNSA cases to identify antimicrobial and diagnostic stewardship opportunities

METHODS

- Charts obtained using ICD9/ICD10 codes
- Dates: 1/1/10-12/31/20 at 2 institutions: Children's Mercy Hospital (CMH) and Le Bonheur Children's Hospital (LBCH)
- 1981 charts identified
- Collected information on presenting symptoms, imaging, antibiotics, microbiology, steroids, and surgery
- Included diagnoses: Cervical lymphadenitis, retropharyngeal and parapharyngeal abscesses
- Excluded: inflammatory or autoimmune conditions, viruses, atypical bacteria (e.g. tuberculosis, nontuberculous mycobacteria, tularemia)

RESULTS

- 1432 patients included; 760 from CMH, 672 from LBCH
- Demographics: patients with DNSA were older; minor differences in gender and race were noted between groups (Table 1)
- Symptoms: DNSA patients were more likely to present with symptoms of drooling, dysphagia, hoarseness, and sore throat. LAD patients more often had neck swelling and skin color changes (Fig. 1)

Stewardship Opportunities for Cervical Lymphadenitis and Deep Neck Space Abscesses

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 *Co-Senior Authors

Figure 1

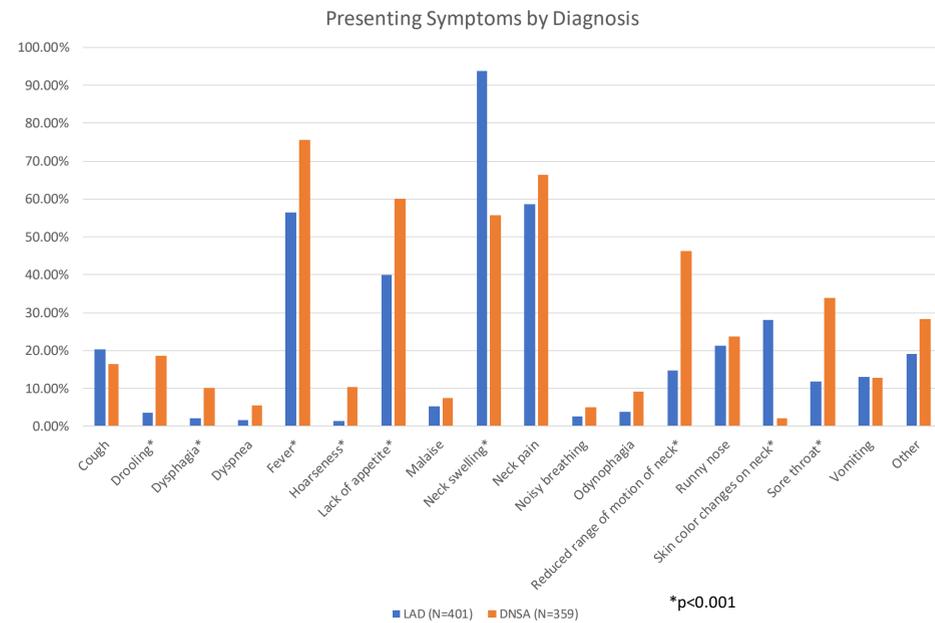


Figure 2

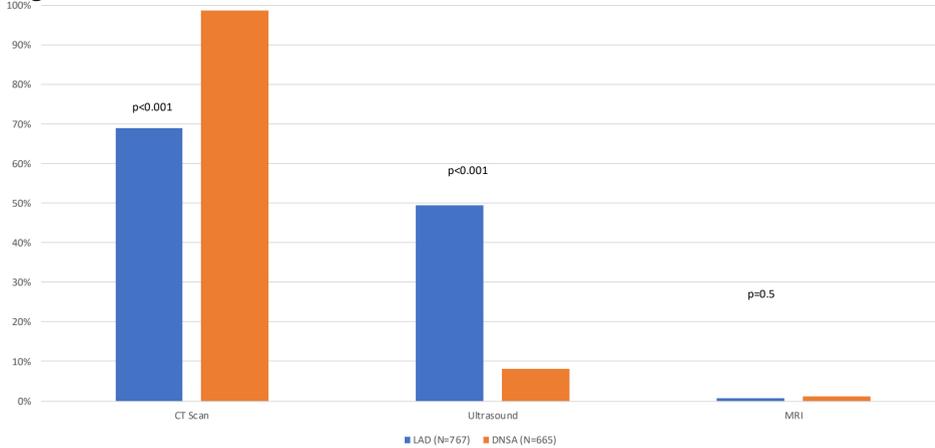
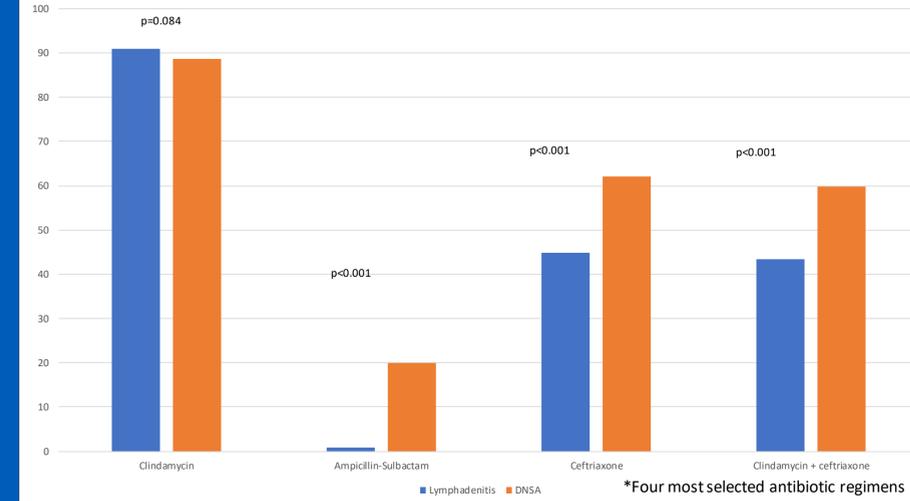


Table 1. Demographics, Culture Results, and Antibiotic Therapy	LAD (n=767)	DNSA (n=665)	P
Age (in years)	2.0 [1.0, 4.6]	4.0 [1.9,6.4]	<0.0001
Gender (Male)	409 (53.3%)	402 (60.5%)	0.008
Race			0.026
-Black	338 (44.1%)	253 (38.0%)	
-White	310 (40.4%)	315 (47.4%)	
Blood culture:			0.05
-Negative	N=492 (64.2%) 480 (97.6%)	N=424 (63.8%) 403 (95.0%)	
Abscess Culture			0.918
-Negative	N=280 55 (19.6%)	N=331 63 (19.0%)	
-S. pyogenes	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
-Gram negative organisms*	5 (1.78%)	15 (4.53%)	
Antibiotics:			<0.001
1	N=762 283 (37.1%)	N=664 129 (19.4%)	
2+	479 (62.9%)	535 (80.6%)	

*H. influenzae, Eikenella, Kingella, E. coli, K. pneumoniae, M. catarrhalis

Figure 3



- Imaging: CT scans were used in nearly all DNSA cases, compared to 69% in the LAD group. Only 8% in the DNSA group had an ultrasound, in contrast to half the LAD group (Figure 2)
- Microbiology: Most patients in both groups had a blood culture obtained. These were negative in ≥95% of all cases
- S. pyogenes most often isolated bacteria in DNSA cultures; S. aureus more common in LAD (Table 1)
- Gram negative organisms accounted for <5% of all DNSA, <2% of all LAD cases.
- Antibiotics: Clindamycin most used antibiotic in both groups (Figure 3)
- Ceftriaxone used more frequently in DNSA cases, but almost always in combination with clindamycin (Figure 3)
- Ampicillin sulbactam used significantly more often with cases of DNSA, though less often than clindamycin or clindamycin + ceftriaxone (Fig. 3)
- More likely to use ≥2 antibiotics in DNSA but still frequently used in LAD (Table 1)

DISCUSSION

- Presenting symptoms may be able to help clinicians distinguish between these two similar infections, which may inform decisions on what imaging to obtain and which antibiotics to start
- CT scans are often used in cases of LAD when an ultrasound may be a viable alternative
- Blood cultures are unlikely to be positive in either disease process and may not need to be obtained
- 92.5% of LAD abscess cultures were either negative or caused by S. pyogenes or S. aureus.
- Omission of empiric Gram negative coverage (ceftriaxone) from cases of LAD is reasonable