

admitted to Rady Children's Hospital from July 2019 through July 2020. We excluded any patients with bone or joint surgery within 30 days prior to admission. Operative samples were chosen at the surgeon's discretion (joint aspirate, synovium, or bone) based on operative findings. We compared NGS testing to standard care culture from the same site.

Results: We enrolled 41 subjects. NGS of the operative samples identified a pathogen in 26 (63.4%) patients versus 18 (43.9%) by culture. Operative culture missed the diagnosis in 10 cases, though PCR identified the organism in 6 of those cases (5 were cases in which *Kingella kingae* was identified). In 4 subjects, NGS identified a putative organism where standard care testing (either PCR or culture) was negative. NGS was falsely positive in 1 subject and falsely negative for one other subject. Sensitivity was 96.3% (CI 95%, 81.0–99.9%) and Specificity was 92.9% (CI 95%, 66.1–99.8) for NGS versus 64.3% (CI 95%, 44.1–81.4) and 84.6% (CI 95%, 54.6–99.9%) for culture respectively.

Conclusion: In this single site prospective study of pediatric osteoarthral infections, we demonstrate improved sensitivity and specificity of NGS testing when compared to standard culture.

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330. Risk Factors for Acute Kidney Injury after the Use of Antibiotic Loaded Bone Cement in Orthopedic Surgery – a Retrospective Case-control Study

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Session: P-10. Bone and Joint

Background: As the number of joint replacement surgeries continues to rise, so does the number of joint infections. Many patients end up needing the implantation of antibiotic loaded bone cement (ALBC) to treat their infection. The use of localized high dose vancomycin, tobramycin, and gentamicin may be linked to acute kidney injury (AKI) in certain patients. Our hypothesis is that patients who developed AKI after receiving a joint spacer had a predisposition to AKI due to other comorbidities, high antibiotic doses in ALBC, immunosuppression, or the use of other nephrotoxic drugs pre-op. These patients may need close monitoring of their renal function and serum antibiotic levels after surgery.

Methods: We performed a chart review of 428 patients who underwent an orthopedic surgery that involved insertion of ALBC at our institution between 2015 and 2018. We excluded patients under age 18, those who had antibiotic irrigation only, trauma patients, non-arthroplasty surgeries (such as fractures and debridement of deep wounds), and patients with missing data for 30 days after the surgery. We identified 57 patients who fit our inclusion criteria and received a bone cement spacer or beads to treat an infection of the hip, knee, shoulder, or ankle. We matched patients who had AKI to 2 patients who did not have AKI. Matching was based on age (\pm 5 years), joint operated on, and antibiotics used.

Results: 15 patients showed an elevated serum creatinine level of over 1.2 within 30 days of surgery. 86.7% of these patients were male, their average age was 64.1 \pm 6.2 years old, 40% had hip surgery, 46.7% knee surgery, 6.7% ankle, and 6.7% shoulder. All received vancomycin and tobramycin in Palacos bone cement. Compared to their case-control matches, these patients had more frequent use of immunosuppressive medication, a history of malignancy, a history of previous kidney disease, and obesity. The use of combined intravenous vancomycin and piperacillin-tazobactam post-operatively may also be linked to higher rates of AKI.

Conclusion: Immunosuppression, obesity, male gender, and history of kidney injury and cancer are factors associated with AKI after ALBC spacer implantation. Further analysis and study are needed to identify potential causation between ALBC use and AKI.

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331. Septic arthritis: when is the joint clean enough?

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Session: P-10. Bone and Joint

Background: Septic arthritis is an orthopedic emergency that requires debridement. Previous authors reported that patients with inflammatory arthropathy, diabetes, infection with *S. aureus*, involvement of a large joint, and synovial fluid WBC >85,000 are associated with >1 debridements. The purpose of this study was to determine factors associated with 1 vs >1 debridements.

Methods: This is a retrospective cohort of adult patients hospitalized at Denver Health Medical Center with large joint septic arthritis between 7/1/2012 and 4/13/20. Patients with implanted orthopedic material, osteomyelitis, and recurrent septic arthritis were excluded. Septic arthritis was defined as a patient presenting with acute arthritis and positive culture OR negative culture and no other etiology. Both electronic capture and manual chart review were performed. Descriptive statistics were used to characterize the population. Statistical analyses included bivariate and multivariate analyses.

Results: Forty-four cases were included (26 knee [59.1%], 4 hip [9.1%], 6 elbow [13.6%], and 8 shoulder [18.2%]). The median age was 55.7 years (41.3–64.1), and 79.5% were male. The most common organisms were *S. aureus* (n=20, 45.5%) and beta-hemolytic *Streptococcus* (n=10, 22.7%). Three patients had no surgical debridement, 21 had 1 debridement, and 20 had >1 debridements.

As compared to those who had 1 debridement, those with >1 debridements were more likely to be male (95% vs 61.9%, p=0.02) and to have a higher synovial fluid leukocyte count (102,761 vs 49,154, p=0.001), CRP at admission (162.5 vs 97.7, p=0.039), and WBC the day prior to debridement (13.4 vs 9.8, p=0.007). Intra-operative purulence trended to association with >1 debridements. Pre- to post-operative changes in opiate use, temperature, and

ability to work with physical therapy were not associated with 1 vs >1 debridements. Both higher synovial fluid leukocyte counts and CRP value at admission were independently associated with >1 debridements (OR 2.31, p=0.015; OR 1.01, p=0.036 respectively).

Conclusion: Patients with higher synovial fluid leukocytes and CRP at admission were more likely to have >1 debridements. Additional studies with functional outcome scores are necessary to determine if >1 debridements are associated with better clinical outcomes.

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332. Spinal Infections: Clinical and Microbiological Characteristics in our Urban Referral Health Center

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Session: P-10. Bone and Joint

Background: There has been an increasing trend in spinal infections (SI) in the U.S. over recent years. We sought to characterize the clinical and microbiological characteristics of SI at our hospital.

Methods: We conducted a retrospective review of SI over a 3-year period (2016–2019) utilizing ICD codes for data retrieval. Search terms included vertebral osteomyelitis, discitis, and epidural abscess. SPSS was used to compute the data.

Results: Of the initially screened 254 patients, 166 were included for analysis. Pertinent demographics were: mean age 59 years, male (61.4%), obese (44.5%), diabetic (25%), and drug-users (20%). Lumbosacral involvement was most common (69.8%); epidural abscess was present in 51.8% of patients. 15.7% had existing hardware. Overall, 79.5% (132/166) of cases had a positive culture from at least one site: blood 56.6% (94/166), CT-guided 83.5% (56/67), and surgical 51.1% (24/47). Of those patients with negative blood cultures, 22% (16/72) had pathogen recovery by CT-guided methods and 33% (24/72) from surgical specimens. *S. aureus* was the most common pathogen isolated at 53.7% (71/132); MSSA comprised 38.6% (51/132) and MRSA 15.2% (20/132).

The mean CRP (8.46 vs 15.83 mg/dL; P< 0.001), and WBC (9.08 vs 13.18 k/mL; P< 0.001) were higher in culture-positive as compared to culture-negative cases. Mean ESR and temperature more than 100.4 °F did not differ significantly between these two groups. The 8-week median recurrence rate was 11.4%, of which nearly half had index *S. aureus* bacteremia.

Frequency of organisms isolated

Gram Positive	Organism	Frequency (%)
	MSSA	51 (38.6%)
	MRSA	20 (15.2%)
	Streptococci spp	16 (12.1%)
	Coagulase negative Staph.	11(8.3%)
	Others	11 (8.3%)
Gram Negative	E.coli	3 (2.3%)
	Pseudomonas	3 (2.3%)
	Serratia	3 (2.3%)
	Enterobacter	2 (1.5%)
	Klebsiella pneumoniae	2 (1.5%)
	Proteus	2 (1.5%)
	Others	4 (3.0%)
Fungi	C. Albicans	2 (1.5%)
Polymicrobial	Polymicrobial	2 (1.5%)

Association of mean inflammatory markers with positive cultures

		Temp (°C)	P value	ESR (mm/hr)	P value	CRP (mg/dL)	P value	WBC (k/mL)	P value
Presence of Abscess	No	37.28	0.183	71.14	0.021	11.32	0.003	10.07	<0.0001
	Yes	37.46		85.6		16.54		14.26	
Positive OR Culture	No	36.99	0.084	94.50	0.309	7.13	0.032	9.40	0.020
	Yes	37.54		79.33		14.90		14.06	
Positive IR Culture	No	37.33	0.488	64.85	0.336	8.37	0.024	9.02	0.024
	Yes	37.18		75.37		15.02		9.88	
Presence of Bacteremia	No	37.18	0.12	71.36	0.033	8.56	<0.0001	9.35	<0.0001
	Yes	37.52		84.85		18.22		14.46	
Any Positive Culture	No	37.19	0.144	70.10	0.123	8.46	<0.0001	9.08	<0.0001
	Yes	37.43		81.74		15.83		13.18	

Conclusion: Our study affirmed that *S. aureus* is the most common cause of SI, of which MSSA was predominant. Epidural abscess was encountered in a substantial

