

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

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**Table 1: Frequency of organism isolated from all cultures**

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%)

## RESULTS

- ❖ *S. aureus* was the most common pathogen isolated 53.8% (71/132)
- ❖ The mean CRP (8.46 vs 15.83 mg/dL;  $P < 0.001$ ) and WBC (9.08 vs 13.18 k/mcL;  $P < 0.001$ ) were higher in culture-positive cases than culture-negative cases.
- ❖ Mean ESR and a fever of  $>100.4$  F did not differ significantly between the two groups.
- ❖ The 8-week median recurrence was 11.4%, of which nearly half had index *S. aureus* bacteremia.

## BACKGROUND

The increasing incidence of spinal infections (SI) in the U.S. over recent years has been well reported. In light of their unspecific presentation, this study aims to characterize the clinical and microbiological features of SI encountered at our institution.

## METHODS

We conducted a retrospective review of SI cases at our institution over a 3-year period (2016 - 2019) utilizing ICD codes for data retrieval.

## RESULTS

- ❖ Of 254 screened patients, 166 were included in the analysis.
- ❖ The mean age was 59 years and 61.4% were male.
- ❖ Comorbidities included obesity (44.5%), diabetes (25%), and drug use (20%).
- ❖ Lumbosacral involvement was noted in 69.8% of patients, epidural abscess in 51.8%, and existing hardware in 15.7%.
- ❖ Overall, 79.5% (132/166) of cases had a positive culture from at least one site: blood (56.6%, 94/166), surgical (83.5%, 56/67), and CT-guided (51.1%, 24/47).
- ❖ Among patients with negative blood cultures, 33% (24/72) achieved pathogen recovery from surgical specimens and 22% (16/72) were recovered via CT-guided methods.

**Table 2: Association of inflammatory markers and positive cultures**

		Temp (°C)	P value	ESR (mm/hr)	P value	CRP (mg/dL)	P value	WBC (k/mcL)	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	

## DISCUSSION

- ❖ In line with previous research, *S. aureus* was identified as the most common cause of SI in our patient population.
- ❖ Interestingly, the majority of these cases were associated with MSSA.
- ❖ While leukocytosis and elevated CRP were generally predictive of culture-positive infection, ESR and fever were not.
- ❖ As recommended by the IDSA Vertebral Osteomyelitis guidelines, blood cultures were obtained for all patients and yielded positive results in more than half of these cases. Importantly, however, pathogen recovery reached nearly 80% with supplemental deep tissue sampling. This finding highlights the critical importance of enhancing microbiological diagnosis.