Invasive and Non-Invasive Osteomyelitis Caused by Group B Streptococcus Infection Among Veterans

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Background

- Rates of invasive infections caused by caused Group B Streptococcus (GBS) are increasing among adults[1]
- Epidemiological studies that assess invasive Group B Streptococcus (GBS) infections may not capture cases of osteomyelitis diagnosed using non-invasive cultures in combination with imaging, laboratory tests, and clinical assessment.

Objective

- To assess the incidence and compare outcomes among individuals diagnosed with GBS osteomyelitis using invasive and non-invasive cultures.

Methods

- We used the US Veterans Health Administration (VHA) database to identify a retrospective cohort of patients diagnosed with GBS osteomyelitis between 2008 and 2017.
- Invasive cases were defined as an International Classification of Disease (ICD) code for osteomyelitis accompanied by a blood or bone culture positive for GBS within 2 weeks.
- Non-invasive cases were defined as an ICD code for osteomyelitis and a non-invasive culture positive for GBS from a concordant site within 2 weeks.
- We compared demographics, comorbid conditions, mortality for patients with invasive and non-invasive GBS osteomyelitis.
- For those with lower extremity GBS OM, we also assessed time to amputation.

Reference

1. Watkins LKF, McGee L, Schrag SJ, et al. Epidemiology of Invasive Group B Streptococcal Infections Among Nonpregnant Adults in the United States, 2008-2016. *JAMA Intern Med*. February 2019. doi:10.1001/jamainternmed.2018.7269

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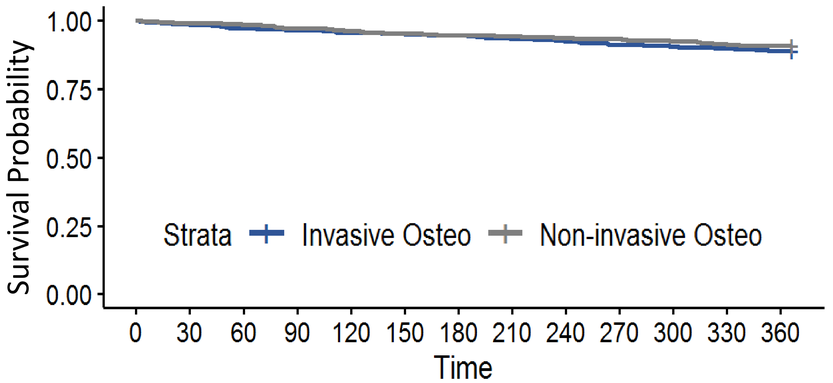
Patient Demographics & Comorbidities

	All (N = 1721)	Invasive Osteomyelitis (N = 1077)	Non-invasive osteomyelitis (N = 644)
Age (± SD)	63.2 ± 10.1	63.2 ± 10.3	63.3 ± 9.8
Male	1691 (98%)	1058 (98%)	633 (98%)
Race			
White	1196 (69%)	756 (70%)	440 (68%)
Black	393 (23%)	231 (21%)	162 (25%)
Charlson Comorbidity Index	3.84 ± 2.3	3.85 ±2.3	3.83 ± 2.4
Co-Morbid Conditions			
Diabetes	1475 (86%)	929 (86%)	546 (85%)
Peripheral Vascular Disease	583 (34%)	348 (32%)	235 (36%)
Chronic Heart Disease	59 (3%)	33 (3%)	26 (4%)
Lower Extremity Osteomyelitis	877 (51%)	313 (29%)	564 (88%)

Mortality Among Patients with GBS Osteomyelitis



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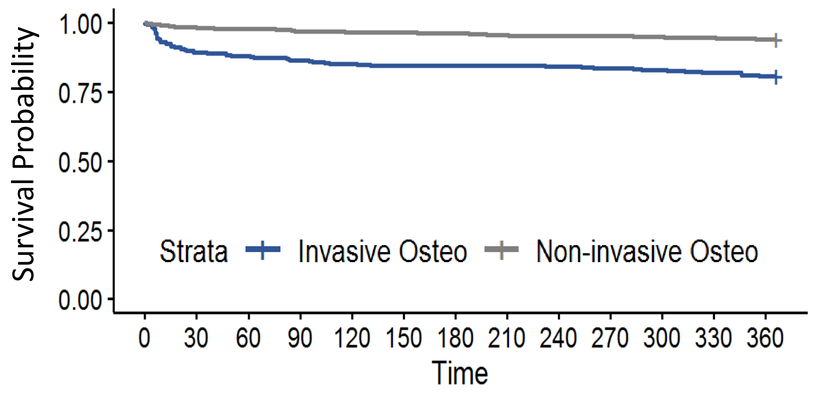
Time to Amputation Among Patients with Lower Extremity GBS Osteomyelitis



Summary

- Among cases of GBS osteomyelitis, we identified 1077 patients with invasive and 692 patients with non-invasive osteomyelitis.
- Among those with lower extremity osteomyelitis, 11% of invasive cases had an amputation at 30 days while 2% of non-invasive cases had an amputation in the same time frame
- Mortality was similar among those with invasive and non-invasive GBS osteomyelitis over 1-year.

Conclusions

- Over 1/3 of the cases of osteomyelitis caused by GBS do not meet the case definition for invasive disease, suggesting that the rates of GBS osteomyelitis may be higher than previously reported.
- Whether diagnosed using invasive or non-invasive microbiological cultures, survival outcomes for people with GBS osteomyelitis were similar, suggesting that non-invasive GBS osteomyelitis is as clinically important as invasive GBS osteomyelitis.