Evaluation of Concurrent ESR and CRP Testing in Native Vertebral Osteomyelitis (NVO): Is More Really Better?

Noah Kriner

Amy Slenker MD
Lehigh Valley Health Network, amy_k.slenker@lvhn.org

Published In/Presented At

Kriner, N. & Slenker, A. (2020, August). Evaluation of Concurrent ESR and CRP Testing in Native Vertebral Osteomyelitis (NVO): Is More Really Better?. Poster Presented at: LVHN Research Scholar Program Poster Session, Lehigh Valley Health Network, Allentown, PA.

Evaluation of Concurrent ESR and CRP Testing in Native Vertebral Osteomyelitis (NVO): Is More Really Better?

Noah Kriner, Amy Slenker MD

Lehigh Valley Health Network, Allentown, Pennsylvania

Introduction

- Native vertebral osteomyelitis (NVO) is an infection of the vertebrae
- Once diagnosed, antibiotics are prescribed targeting the causative agent of infection
- Treatment is typically monitored by concurrent ESR and CRP laboratory testing
- Importantly, the necessity of utilizing both inflammatory markers concurrently is unclear and Choosing Wisely guidance suggests using both labs is redundant
- The primary aim of this study is to review the utility of concurrent ESR and CRP testing in NVO

Methods

Inclusion and exclusion criteria were set up to standardize the candidates in this study:

Inclusion

- 18 years or older
- Admitted to LVH-CC or LVH-M (8/1/15-7/31/17)
- Received inpatient ID consult
- Diagnosed with NVO
- Received outpatient parental antimicrobial therapy
- Received IV/oral antimicrobial therapy
- At least one concurrent testing of ESR and CRP

Exclusion

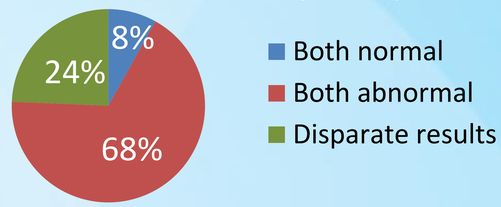
- Lack of microbiological diagnosis
- Previous spinal instrumentation (one year)
- Spinal tuberculosis, spinal brucellosis, NVO caused by yeasts and molds and spinal infections caused by seeding from a local site of infection
- Only one episode of NVO will be included
- Cases with possible culture contaminants

ANOVA statistical analysis utilized to compare concurrent ESR and CRP results to readmissions within 30 days.

Results

Gender	Male	70.73%
	Female	29.27%
Race	Black or African American	2.44%
	Missing or Unavailable	2.44%
	Other	2.44%
	Patient declined or refused	2.44%
	Unknown	2.44%
	White or Caucasian	87.80%
Ethnicity	Hispanic or Latino	2.44%
	Not Hispanic or Latino	87.80%
	Patient Refused	2.44%
	Unknown	7.32%

- 41 patients underwent 332 ESR and CRP tests (173 ESR, 159 CRP) during their treatment course
- Of the 148 ESR and CRP tests performed concurrently: 8.1% (12/148) of concurrent ESR/CRP tests were in agreement for normal results, 67.6% (100/148) were in agreement for abnormal results and 24.3% (36/148) had disparate results



- The average treatment course was 47 days (range, 36-147): 46 days for disparate results, 50 days for instances of agreement of abnormal results, and 44 days for instances of agreement of normal results (p=NS)
- 19.5% (8/41) of patients experienced a 30-day hospital readmission and underwent 32 instances of concurrent ESR/CRP testing: 3.1% (1/32) instances were in agreement for normal results, 75.0% (24/32) were in agreement for abnormal results and 21.9% (7/32) had disparate results (p=NS)

Discussion

- The percent agreement between ESR and CRP was 75.7 and the percent disagreement was 24.3
- There was no statistically significant difference in 30-day readmissions for patients with concurrent ESR and CRP testing when the results were in agreement or disparate
- The data suggests that concurrent ESR and CRP tests may not be necessary for monitoring treatment of NVO

Conclusion

- Concurrent ESR and CRP tests for monitoring treatment of NVO may not be helpful
- A limitation of the data is the small sample size and further research should be performed on a larger sample size
- Additionally, further studies should extend the follow-up period to one year to attempt to capture more potential treatment failures

REFERENCES:

1. Elie F. Berbari, Souha S. Kanj, Todd J. Kowalski, Rabih O. Darouiche, Andreas F. Widmer, Steven K. Schmitt, Edward F. Hendershot, Paul D. Holtom, Paul M. Huddleston, Gregory W. Petermann, Douglas R. Osmon, 2015 Infectious Diseases Society of America (IDSA) Clinical Practice Guidelines for the Diagnosis and Treatment of Native Vertebral Osteomyelitis in Adults, *Clinical Infectious Diseases*, Volume 61, Issue 6, 15 September 2015, Pages e26–e46, https://doi.org/10.1093/cid/civ482

2. Carragee EJ, Kim D, van der Vlugt T, Vittum D. The clinical use of erythrocyte sedimentation rate in pyogenic vertebral osteomyelitis. Spine 1997; 22:2089–93.

LVHN.org Lehigh Valley Health Network