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Is It Useful to Measure Sedimentation Rate (ESR) as a Broad Screening Test in the Emergency Department?

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**Background:**
Since the landmark study by Zacharski et al in 1967 reported an occurrence of malignancy in 58% of patients with sedimentation rates over 100, multiple studies have been done to further investigate the diagnostic significance of a sedimentation rate over 100. The classes of diagnoses that were most commonly thought to explain the extreme elevation in sedimentation rate in these studies were infection, systemic inflammatory disorders, malignancy and renal disease. Upon closer evaluation of these studies, we noted that they were all case series and did not attempt to compare the frequency of these diagnoses to patients with ESR < 100.

**Objectives:**
To compare the above classes of discharge diagnoses in patients with ESR ≥ 100 with those in patients <100 to ascertain if certain types of illnesses occurred with clinically important increased frequency in those patients with ESR ≥ 100.

**Methods:**
Case-control via chart review. Cases: all admitted patients with ESR ≥100 drawn during defined period. Controls: adjacent admissions with ESR < 100. All discharge ICD diagnosis retrieved and presence/absence of diagnoses in specified groups determined. Alpha (p-value limit) of 0.05, with Bonferroni correction for 4 comparisons.

**Results:**
We enrolled 164 cases and 315 controls. There were statistically significant differences in frequency and odds ratios between cases and controls for infection (65% vs 42%, OR 2.64), systemic inflammatory disorders (44% vs 25%, OR 2.38) and renal disease 21% vs 10% OR 2.24) but not malignancy (16% vs 11% [p = 0.08] OR 1.63 [ 0.94, 2.81]).

**Conclusion:**
This was the first study to compare discharge diagnoses in patients with ESR ≥ 100 to control patients with ESR < 100. We found that while malignancy did occur at a higher rate in the patients with ESR ≥ 100 as had been previously reported, this difference was not statistically significant. The other diagnostic classes which had been thought to explain ESR ≥ 100 in previous studies (infections, systemic inflammatory disorders and renal disease) did occur at significantly increased frequencies in patients with ESR ≥ 100. As the odds ratios in this study are quite modest and the groups of diagnoses very broad, there may be little clinical utility in using ESR ≥ 100 to screen for these diagnostic groups in the ED. Nonetheless, when ESR has been performed, clinicians should consider these odds ratios alongside the pre-test probabilities.