**Role of Inflammatory Markers in Diagnosing Diabetic Foot Infection: A Meta-analysis**

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**Introduction**

According to IDSA guidelines, the most definitive way of diagnosing diabetic foot infection (DFI) is by combined histology and culture.[1] Culture of soft tissue or bone is invaluable in diagnosing infection, but is time consuming. MRI is the most accurate diagnostic imaging modality for diabetic foot osteomyelitis (DFO) [1] but even MRI is not 100% accurate (sensitivity 90% and specificity 80%).[2] In a diabetic patient, the lifetime risk for developing chronic foot infection is around 15–25%.[3] The financial cost of diabetes related complications is very high and about one third of costs are linked to diabetic foot ulcer (DFU) care. Infection is the main driving force behind admissions related to DFU care. DFU account for 83% of major and 96% of minor amputations.[4] Inflammatory markers including erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) and procalcitonin (PCT) are rapid, simple and inexpensive laboratory tests that can aid in early diagnosis of diabetic foot infection (DFI) and monitor response to treatment.[1] We did a meta-analysis to compare diagnostic performance of inflammatory markers for detecting DFI.

**Methods**

We searched PubMed, Embase and Cochrane databases from their inception to December 2017. This meta-analysis was performed according to PRISMA guidelines. We included studies based on following inclusion criteria (1) At least one of the biomarkers (ESR, CRP, PCT) was evaluated (2) both sensitivity and specificity were measured as outcomes (3) sufficient data was available to construct 2 X 2 contingency table. We used bivariate random effect regression model to pool the sensitivity and specificity of the targeted biomarkers.

**Results**

A comprehensive literature search identified a total of 73 studies. 12 studies met our inclusion criteria. Number of studies reporting data on each individual biomarker was as follows: 11 for ESR, 7 for CRP and 5 for PCT. Pooled sensitivity and specificity for ESR were calculated to be 0.84 (95% CI 0.76-0.89) and 0.82 (95%CI 0.73-0.89) with area under receiver operating characteristic (AUROC) of 0.90 (95% CI 0.87-0.92). Pooled sensitivity and specificity for CRP were found to be 0.64 (95%CI 0.52-0.78) and 0.70 (95%CI 0.62-0.83) with AUROC of 0.89 (95%CI 0.82-0.88). Pooled sensitivity and specificity for PCT were 0.74 (95%CI 0.62-0.83) and 0.93 (95%CI 0.65-0.99) with AUROC of 0.84 (95% CI 0.81-0.87).

**Conclusion**

- ESR could be beneficial in ruling out diabetic foot infection in patients with low suspicion of disease.
- CRP could be helpful in ruling in DFI in patients who have high suspicion of disease.
- Physicians should avoid ordering both ESR and CRP because role of CRP is limited.
- All inflammatory markers need standardization of threshold levels for detecting diabetic foot infection.

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**References:**


