Journal Club: 23 November 2015
Attendees: Gunther Selzer, Will Goude, Victoria Deans, Asim Saleemi, Fady Awad
Location: Walsall Manor Hospital, ST8 Birmingham Rotation
Reviewer: Mohammad Shahid

Shafafy R, McClatchie W, Chettiar K, Gill K, Hargrove R, Sturridge S, Guyot A.
Use of leucocyte esterase reagent strips in the diagnosis or exclusion of prosthetic joint infection. *Bone Joint J* 2015;97-B:1232-6.

AIM
To determine whether leucocyte esterase (LE) colorimetric reagent strips could be used for the diagnosis or exclusion of prosthetic joint infection.

METHODS
This dual-centred study looked at 105 synovial aspirations (26 THA; 79 TKR) taken from those suspected of having a prosthetic joint infection (PJI) following arthroplasty and those undergoing revision arthroplasty. The aspiration was applied to the LE strips, added to blood culture bottles and sent for synovial white cell count (WCC). Separate tissue and blood samples were sent for culture, histology and measurement of inflammatory markers. The LE strip analysis was carried out on an automated reader. Semi-quantitative reagent strip readings of 15, 70, 125 and 500 white blood cells were validated against a manual synovial white cell count. A receiver operating curve (ROC) was formed to establish the optimal cut-off point for semi-quantitative results.

RESULTS
Out of 105 aspirates, 21 were infected, two had crystal arthropathy and the remaining 82 were not infected. The optimal cut-off point in the diagnosis of PJI was 97 WBC with the closest LE reading being 125 WBC. This gave a sensitivity of 81% and specificity of 93%. The positive and negative predictive values were 74% and 95% respectively. The mean CRP was higher in the infected group ($p < 0.009$). This was not the case for the ESR ($p = 0.83$).

CONCLUSION
The high specificity and negative predictive values indicate that this test can may exclude PJI, and negate the need for further tests. The other advantages of this test are that it is quick, cheap and can be is performed intraoperatively.

CRITIQUE:

Strengths of the study
- Relatively new technique
- Dual centres
- An automated reader was used. In a previous study the strips were read by the clinican and so an element of inter/intraobserver variability may have been apparent

- The reagent strips from the same manufacturer were used
- The study highlights the difficulty in diagnosing prosthetic joint infection

Methodology concerns
- They only had 21 infected samples
- If the sample was blood stained or had metal debris then they could not analyse using the reader
- The sensitivity and positive predictive values were low