

The utility of Infrared Thermometry in the Discernment of Diabetic Foot Infection

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Background

Diabetic Foot infection is a cause of significant morbidity and is associated with the need for lower extremity amputation. The diagnosis of infection is a clinical one and the classical signs of inflammation are often absent in those with DM due to concomitant immunopathy (Glaudemans et al 2015).

Materials & Methods

We utilised the FLIR E6 infra-red camera to assist in the clinical diagnosis of foot infection across 20 patients with suspected signs of infection in order to confirm diagnosis and guide therapy.

In those where the diagnosis of clinical infection was not clear, we utilised infra-red thermometry to aid in the clinical diagnosis.

We utilised a 2.2°C temperature difference between feet in order to aid the clinical decision making. When the diagnosis was still unclear we referred onwards for inflammatory marker testing.

Results

We found that the use of infra-red thermometry was a good clinical aid in those who did not have overt signs of infection. In (n=17) patients no further need for assessment of systemic inflammatory markers was required to confirm or refute the clinical diagnosis.

By utilising this point of care test we were able to reduce the number of patients referred for blood tests to confirm or refute diagnosis.



Conclusions

The use of infrared thermometry is a useful diagnostic aid for the presence of DFI in those where the clinical diagnosis is uncertain and the cardinal signs of inflammation are absent. This reduces the need for systemic measures of inflammatory markers and supports clinical decision making.

Patient No	Clinical Signs	Temperature	Inflammatory marker
1	No	No	Not needed
2	No	No	Not needed
3	Yes	Yes	Not needed
4	?	Yes	Yes
5	?	Yes	Yes
6	No	Yes	Not needed
7	Yes	Yes	Not needed
8	?	Yes	Not needed
9	No	Yes	Not needed
10	?	Yes	Yes
11	No	Yes	Not needed
12	?	Yes	Not needed
13	?	Yes	Not needed
14	No	No	Not needed
15	?	Yes	Not needed
16	Yes	Yes	Not needed
17	?	Yes	Not needed
18	?	Yes	Not needed
19	?	Yes	Not needed
20	?	Yes	Not needed

References

Glaudemans, A.W.J.M., Uçkay, I. and Lipsky, B.A., 2015. Challenges in diagnosing infection in the diabetic foot. *Diabetic Medicine*, 32(6), pp.748-759