Nailfold capillaroscopy in systemic sclerosis: How many fingers should be examined to detect abnormality?

Introduction

- Nailfold capillaroscopy plays an important role in diagnosing systemic sclerosis (SSc), with abnormal nailfold capillary appearance (Figure 1) being included in the 2013 ACR/EULAR diagnostic criteria [1].
- Common queries from clinicians who assess patients with suspected SSc are:
  1) which finger(s) should be imaged?
  2) how many digits in total should be imaged?

Method

- High-magnification (300x) nailfold videocapillaroscopy mosaic images were captured using a microscope system from KK Technology (Honiton, UK).
- Nailfold images (all fingers from each of 101 patients with SSc) and subsequent multi-observer assessments from a large study of quantitative capillaroscopy [2] were characterised by digit.
- Observers assessed images using custom software (Figure 2), including (for this analysis) counting giant vessels and grading the image overall (including normal/early/active/late, as well as non-specific and ungradable).

Objectives

To demonstrate the sensitivity of assessing different (combinations of) fingers for the presence of two markers of capillary abnormality: (1) presence of giant capillaries, and (2) overall image grade, compared to assessment of all 8 fingers.

Results

- For each of seven combinations of finger(s), Table 1 shows the sensitivity percentages for the two parameters.
- For the 8-finger “gold standard”, sensitivity against the diagnostic criteria was 53.0% (71 positive cases from 134 assessments) and 73.1% (98 positive cases from 134 assessments) for presence of giants and image grade, respectively.
- Pairs of fingers have higher sensitivity than single fingers in all cases, and the 4-finger combination shows a sensitivity of 85.9% and 91.8% for giants and image grade, respectively.

Conclusion

- Assessing only middle and ring fingers on both hands detects abnormality in 85-90% of cases of established SSc (halving imaging time).
- Assessing only ring fingers (sensitivity 73-80%) brings a 75% reduction in imaging time.
- Some cases of abnormality will be missed by not examining all fingers.

Table 1. Sensitivity values for two nailfold capillary parameters (presence of giants, and image grade).