Anticentromere antibody, disease duration and history of surgical debridements predict calcinosis in patients with systemic sclerosis

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Background
Calcinosis (subcutaneous deposition of calcium salts, occurring predominantly over pressure points), is a characteristic feature of systemic sclerosis (SSc), occurring in 20-40% of patients [Figure 1]. It can also be associated with significant pain and disability.

Figure 1: Calcinosis affecting the digits and hand

Aim
To examine clinical and serological associates of SSc-related calcinosis, and whether it is possible to build a model to predict presence of calcinosis.

Methods
This was a cross-sectional study of patients with SSc attending a tertiary referral centre. Clinical and demographic features were reviewed.

The variables examined were:
• age
• gender
• disease subtype
• duration of SSc
• previous intravenous prostanoid infusions
• surgical debridement and/or amputation
• autoantibody status (anticentromere and antitopoisoerase)
• pulmonary fibrosis
• pulmonary hypertension.

• Logistic regression was used to investigate associations between demographic and clinical factors and the odds of clinical calcinosis. Variables of interest were then combined in a multiple regression model to obtain adjusted odds ratios and confidence intervals.

Results
317 patients (86% female, median age 60 years, range 24-91)
94 (30%) had clinically apparent calcinosis.
Age distribution, and gender, were similar in those with and without calcinosis.
Although a number of predictors suggested themselves during exploratory analysis of the data, only surgical debridements, anticentromere status and disease duration remained significant after adjusting for other variables [Table 1].

Therefore:
• A patient who had had debridements was more likely to have calcinosis compared to one who had not (OR [95% CI]: 3.39 [1.61 to 7.13]) [Figure 2]
• A patient who had anticentromere positivity was more likely to have calcinosis compared to one who had not (OR [95% CI]: 2.28 [1.24 to 4.21]) [Figure 3]
• the odds of having calcinosis increased by 8% (CI, 4 to 11%) for each year since diagnosis.

The specificity of the model was high (correctly classifying a patient who did not have calcinosis 91% of the time), but the sensitivity was relatively low, correctly classifying a patient who did have calcinosis only 35% of the time.

Figure 2: Calcinosis status of patients with and without debridements

Figure 3: Calcinosis status of patients with and without positive anticentromere (ACA) antibody

Conclusions
• History of surgical debridement, positive anticentromere antibody and disease duration were predictors of calcinosis. The low sensitivity of a multiple regression model suggests there are other important predictors of calcinosis that have not been accounted for in this analysis.

Table 1: Summary of the patients by characteristics, n (%) or median (interquartile range).

Table 2: Adjusted odds ratios, 95% CIs and p-values from multiple logistic regression analysis.