Resolution of diabetic cheiroarthropathy

We report on two patients with diabetic sclerosis or cheiroarthropathy in whom both skin and joint changes resolved completely. In one case this improvement seemed to be related to better diabetic control. This is the first time such improvement has been reported.

Case reports

The flexion contractures of the interphalangeal joints of the hands were assessed in the two patients by the method of Grigg et al.,1 which we use routinely in evaluating such diabetic patients. The patient’s hands are placed palm down on a table top with fingers spread. These fingers are then viewed by the examiner at table level and the contact of the fingers with the table determined. Normally the entire palm surface of the fingers makes contact. Patients are classified as having stage 1 disease if they are unable to make contact with some portion of one finger and stage 2 disease if unable to make contact with two or more fingers.

Skin thickness was assessed over the fingers as outlined by Siebold:2

- 0 = Normal
- 1 = Slight but definite thickening with inability to dent the skin between the examiner’s thumbs
- 2 = Mild to moderate changes
- 3 = Severe thickening
- 4 = Extreme thickening

Glycosylated haemoglobin concentration was estimated using electrophoresis on cellulose matrix (Glyco-Phore, Gelman Sciences Ltd) (normal range up to 8%).

Case 1 — A 16 year old girl with an 11 year history of insulin dependent diabetes mellitus developed limited movement of all interphalangeal joints in her hands with associated tightening and thickening of overlying skin. She was classified as having stage 2 disease and skin thickness 2+.

She was treated with intravenous acyclovir and intravenous corticosteroids. Fifteen months later she was admitted to hospital with severe skin thickening, and she was breathless at rest with a haemoglobin 9.7%. With improved diabetic control the hand changes resolved completely over five months. She did not have any microvascular complications.

Case 2 — A 58 year old man (interestingly, the father of the patient in case 1) with a 12 year history of insulin dependent diabetes mellitus developed a clinical picture similar to that of his daughter. He was classified as having stage 2 disease and skin thickness 2+. The symptoms occurred after five months of erratic diabetic control, although the haemoglobin A1 concentration was only 9.7%.

With improved diabetic control the hand changes resolved completely over five months. He did not have any microvascular complications.

Comment

Flexion contractures of interphalangeal joints are well described in insulin dependent diabetics, various series suggesting an incidence of 20-30%.3 In some of these contractures are associated with skin that is waxy or has a scleroderma-type appearance, and the terms diabetic sclerosis and diabetic cheiroarthropathy have been used to describe this.

Interest in the pathogenesis of this condition is heightened by suggestions that those who develop joint contractures are at an increased risk of developing microvascular diabetic complications.4 Joint contractures, and more recently skin thickness, in these patients have been correlated with the duration of diabetes. Workers have suggested that these clinical changes reflect abnormal non-enzymatic glycosylation of collagen, and it has been shown experimentally in rats that these changes in liver, kidney, and haemopoiesis are reversible. Such reversibility was not shown to occur in collagen.5 This contrasts with the findings in our patients, in whom apparently typical skin and joint changes resolved completely. Resolution of joint contractures has not previously been described, although in a small study skin thickness measured by ultrasonography decreased with improved diabetic control.6 Any theory that is advanced to explain diabetic cheiroarthropathy must take account of the potential reversibility of these changes. Observations need to be performed on several occasions in affected patients to evaluate the clinical course more fully.

References


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