Case report

Hypercholesterolaemic arthropathy in primary biliary cirrhosis

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SUMMARY A new cause of severe transient flitting polyarthritides is described in a patient with primary biliary cirrhosis. Hypercholesterolaemia is thought to provoke acute inflammatory peri-arthritis and peritendinitis. The clinical features are sudden onset of peripheral joint pain and effusion, with redness of the overlying skin, often precipitated by unusual exercise. Cholestyramine may help to prevent this form of arthritis.

Hypercholesterolaemia is a common biochemical finding in patients with primary biliary cirrhosis. Clinically this may be associated with xanthelasmata and xanthomata, which can be either tuberous in relation to tendons or planar. Although it has been recognised since 1968 that a characteristic, transient, flitting polyarthropathy may occur in familial hypercholesterolaemia (Khachadurian, 1968; Rooney *et al.*, 1975), no similar arthropathy has been reported in primary biliary cirrhosis.

Case report

A 49-year-old woman had been diagnosed as having primary biliary cirrhosis since 1969. The diagnosis was supported by typical clinical, biochemical, and serological features, together with a raised IgM. Liver biopsy in 1969 had shown all the specific lesions of primary biliary cirrhosis, and general annual biopsies demonstrated slow progression to cirrhosis. She had been given no specific therapy apart from intermittent cholestyramine since 1972 for pruritus.

She was admitted in October 1977 with a 10-day history of joint pains. The patient gave clear and a graphic description of severe joint pains affecting both wrists, the dorsum of both hands, and 1 shoulder. These pains were 'flitting' with only

1 or 2 joints affected at any one time and with the symptoms in each joint lasting no longer than 3 days before settling completely. While each joint was affected it was very inflamed, with marked swelling and redness of the overlying skin. Morning stiffness of the affected joints was a feature, but symptoms were greatest in the evening after the patient had been active throughout the day.

On physical examination she was deeply pigmented and icteric. She had xanthelasmata but no xanthomata. A few spider naevi were evident on the anterior chest wall and a firm liver edge was easily palpable 3 cm below the costal margin. The spleen tip was also palpable, but there was no ascites. The wrists were both swollen and tender, and there was redness of the skin overlying the right wrist. However, there was no evidence of synovial hypertrophy, and the ligaments and tendons were intact. A striking feature was red streaks over tendons on the dorsum of 1 hand.

Her liver function tests at this time were bilirubin 230 $\mu\text{mol/l}$, alkaline phosphatase 83 King-Armstrong Units, and serum cholesterol 10.5 mmol/l. Mitochondrial antibody was positive at a titre of 1/512, and tests for rheumatoid factor were repeatedly negative. X-rays of bone and joints were entirely normal.

Symptomatic treatment with soluble aspirin was begun, and this was followed by a brisk haematemesis, which at endoscopy was shown to be from an ulcer in the gastric fundus and not from small

varices which were also present. All gastric symptoms settled within a few days after discontinuation of aspirin therapy, and full healing of the ulcer was subsequently confirmed at a further endoscopy.

She has subsequently had 2 further episodes of acute pain affecting shoulders and wrists provoked by carrying heavy loads. Again the symptoms were transient and associated with joint swelling and erythema of the overlying skin. Cholestyramine has since been restarted but no further anti-inflammatory agents were given.

Discussion

The arthropathy of hypercholesterolaemia has been shown to be much more common in familial hypercholesterolaemia than was previously recognised, and its clinical features have been well reviewed (Rooney *et al.*, 1978). The transient flitting polyarthritis, often initiated by unusual exercise, with joint effusion and redness of the overlying skin are typical. Hypercholesterolaemic bone lesions have been described in 3 patients with primary biliary cirrhosis (Ansell *et al.*, 1957). These were symptomless cysts seen on x-ray which only led to clinical illness in 1 patient when causing collapse of a femoral head. This condition is clearly different from the arthropathy of hypercholesterolaemia. In a personal series of 137 patients with primary biliary cirrhosis collected over 6 years we have found a mean cholesterol of 9.01 ± 6.29 mmol/l (range 2.98–35.7 mmol/l) and mean triglyceride of 1.79 ± 0.8 mmol/l (range 0.8–5.24 mmol/l). The patient described had a consistently high cholesterol level.

Primary biliary cirrhosis has been associated with other more readily recognised arthropathies, including rheumatoid arthritis and scleroderma (Sherlock and Scheuer, 1973; Clarke *et al.*, 1978). Our own experience confirms this finding. In the 137 patients, including 6 males, there were 10 cases (7.3%) of definite or classical rheumatoid arthritis, 6 cases (4.4%) of the full CRST syndrome (calcinosis, Raynaud's syndrome, sclerodactyly, and telangiectasia), and 1 case of polymyalgia rheumatica. Several other patients had isolated features of the CRST syndrome. We did not identify any hypercholesterolaemic bone cysts. Our figures for the

prevalence of rheumatoid arthritis (Mills *et al.*, 1977) accord well with experience in other centres, but we did not find scleroderma in as many as 17% of our patients (Clarke *et al.*, 1978). These authors state that many of their patients had mild scleroderma and may represent a selected population. Moreover, a previous report (Golding *et al.*, 1973) of multisystem involvement in primary biliary cirrhosis from the same institution did not mention scleroderma.

This case has been reported to draw attention to another cause of arthritic symptoms in primary biliary cirrhosis. The widespread use of cholestyramine to control pruritus may help to prevent this form of arthropathy by decreasing serum lipids. Cholestyramine would seem appropriate therapy if the lipid abnormalities are related to the arthritic features, as seems likely from the reports of Khachadurian (1968) and Rooney *et al.* (1978). Hypercholesterolaemic arthropathy may not be rare in this disorder, and further reports of this condition are awaited.

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