Case report

Haemophilus influenzae tenosynovitis

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SUMMARY A case is reported of polytenosynovitis in a 31-year-old male during the course of a severe bacteraemic illness caused by *Haemophilus influenzae* type b. The clinical presentation was similar to tenosynovitis caused by other bacterial or viral agents. As the management of the *H. influenzae* tenosynovitis would differ from that due to other causes, the addition of *H. influenzae* type b to a differential of tenosynovitis should be considered. Recognition and prompt treatment by appropriate antibiotics may be important to avoid suppurative complications affecting the tendons. As the pathophysiology of the tenosynovitis is not clear, careful bacteriological and immunological assessment must be obtained.

Haemophilus influenzae has a predilection for infecting serosal surfaces. To our knowledge there has been only one reported case of tenosynovitis associated with arthritis caused by *H. influenzae* type b (Raff and Dannaher, 1974). In this report we describe a patient with tenosynovitis associated with a *H. influenzae* type b respiratory infection and sepsis.

Case report

A 31-year-old male was admitted to hospital on 2 September 1977 with a 4-day history of fever, chills, sweats, and pleuritic chest pain. He had also noted painful swelling, erythema, and warmth on the back of the left hand and foot. This pain was exacerbated by dorsiflexion of the fingers and toes. He was 'allergic' to penicillin. The patient appeared acutely ill with blood pressure 170/60 mmHg, temperature 39.0°C, pulse 140/minute, and regular respirations 26/minute. In addition to an injected pharynx, tender bilateral anterior cervical adenopathy, clear lung fields, and sinus tachycardia with no audible rubs, murmurs, or extra sounds, the dorsal aspect of the left wrist and left foot were swollen, warm, and erythematous. Active movements of the left wrist and fingers produced more pain than did passive

movements. Radiographs of the affected parts were normal. Four blood cultures obtained in an hourly sequence were positive for *H. influenzae* type b. The organisms were negative for B-lactamase activity, and the patient was placed on parenteral ampicillin (12 g/day intravenously) after skin tests which were negative for penicillin allergy. The patient's illness resolved over 2 weeks.

Comment

A diagnosis of acute tenosynovitis is based on the presence of swelling accompanied by some erythema and induration (Clain, 1967; Pinals, 1972). Such patients tend to keep the hand and fingers supported and slightly flexed to prevent any movement (Bell, 1968). There is a greater difficulty in active than passive movements (Mills *et al.*, 1976). Stretching the tendons passively produces pain in the area of the inflammation. Additional support for the diagnosis of tenosynovitis is provided by negative x-rays (Mills *et al.*, 1976).

In adults a variety of illnesses have been described as caused by *H. influenzae* type b, namely pneumonia (Quintiliani and Hymans, 1971), meningitis (Eykin *et al.*, 1975), purulent pericarditis (Crossley *et al.*, 1973), septic arthritis (Raff and Dannaher, 1974), endocarditis (Lynn *et al.*, 1977), epiglottitis (Hawkins *et al.*, 1973), and recently cellulitis (Drapkin *et al.*, 1977). One of the patients with arthritis developed tenosynovitis (Raff and Dannaher, 1974).

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Tendon sheath inflammation may be caused by a variety of illnesses, for example, trauma, rheumatoid arthritis, tuberculosis, gout, gonococcal infections, secondary and tertiary syphilis, and coccidioidomycoses.

The pathogenesis of tenosynovitis in each disease varies. Tuberculous tenosynovitis is caused by invasion of the tendon sheaths by mycobacteria. This is validated by demonstrating caseation necrosis in the tendon sheaths and/or isolation of the bacillus via aspiration and culture or guinea-pig inoculation (Bell, 1968). On the other hand rheumatoid arthritis is an immune complex disease. A diagnosis of rheumatoid tenosynovitis is based on associated features of the disease and seropositivity. Involvement of the tendon sheath in rheumatoid arthritis results in a proliferative process (Sones, 1968). Though the tendon sheaths in rheumatoid arthritis have been surgically excised, detailed histopathology and immunofluorescent studies have not been done. However, the fluid and synovium obtained from joint spaces have been studied and show typical features of an immune complex disease, namely, low complement levels in joint fluid and deposits of antigen-antibody complex on the synovium (Zvaifler, 1974). From these data one may assume that the tendon sheaths undergo similar changes in rheumatoid arthritis. Gonococcal tenosynovitis develops in the acute bacteraemic phase of the illness (Holmes *et al.*, 1971). Studies have been completed on the associated acute synovitis of the joint spaces. In this early phase of the illness either fluid is not obtained or it is sterile, so that some authors have suspected a 'hypersensitivity' phenomenon' (Wright, 1963) or cross-reactivity of the gonococcal and synovial antigens. So far these hypotheses have not been confirmed by laboratory testing.

From the above evidence we feel secure in suggesting the possibility of polytenosynovitis occurring in a bacteraemic illness caused by *H. influenzae* type b. However, we cannot state with certainty whether this is due to direct invasion of the *H. influenzae* bacteria or an immune reaction involving the tendon sheaths. We would suggest that in similar patients immunological and bacteriological

studies may be undertaken to confirm the exact pathogenesis. *H. influenzae* type b. infection should be added to the list of differential possibilities for acute tenosynovitis.

References

- Bell, J. L. (1968). The hand. In *Christopher's Textbook of Surgery*, 9th edn., pp. 1141-1197. Edited by L. Davies. W. B. Saunders: Philadelphia.
- Clain, A. (Ed.) (1967). *Hamilton Bailey's Demonstrations of Physical Signs in Clinical Surgery*, 14th edn., p. 448. Williams and Wilkins: Baltimore.
- Crossley, K., Bigos, T., and Joffe, C. D. (1973). Hemophilus influenzae pericarditis: A report of two cases in adults with a summary of the literature. *American Heart Journal*, **85**, 246-251.
- Drapkin, M. S., Wilson, M. E., Shrager, S. M., and Rubin, R. N. (1977). Bacteremic hemophilus influenzae type b cellulitis in the adult. *American Journal of Medicine*, **63**, 449-452.
- Eykin, S. J., Thomas, R. D., and Phillips, I. (1974). Haemophilus influenzae meningitis in adults. *British Medical Journal*, **2**, 463-465.
- Hawkins, D. B., Miller, A. M., Sachs, A. B., and Benz, R. T. (1973). Acute epiglottitis in adults. *Laryngoscope*, **83**, 1211-1220.
- Holmes, K. K., Counts, G. W., and Beaty, H. N. (1971). Disseminated gonococcal infection. *Annals of Internal Medicine*, **74**, 979-993.
- Lynn, D. J., Kane, J. G., and Parker, R. H. (1975). Hemophilus parainfluenzae and influenzae endocarditis: A review of forty cases. *Medicine*, **56**, 115-128.
- Mills, M. B., Millender, L. H., and Halebutt, E. A. (1976). Stiffness of the proximal interphalangeal joints in rheumatoid arthritis. *Journal of Bone and Joint Surgery*, **58A**, 801-805.
- Pinals, R. S. (1972). Traumatic arthritis and allied conditions. In *Arthritis and Allied Conditions*, 8th edn., pp. 1391-1410. Edited by J. E. Hollander. Lea and Febiger: Philadelphia.
- Quintiliani, R., and Hymans, P. H. (1971). The association of bacteremic Hemophilus influenzae pneumonia in adults with typeable strains. *American Journal of Medicine*, **50**, 781-786.
- Raff, M. J., and Dannaher, C. L. (1974). Hemophilus influenzae septic arthritis in adults. *Journal of Bone and Joint Surgery*, **56A**, 408-412.
- Sones, D. A. (1968). Surgery for rheumatoid arthritis: Timing and techniques: general and medical aspects. *Journal of Bone and Joint Surgery*, **50A**, 576-586.
- Wright, V. (1963). Arthritis associated with venereal disease. *Annals of the Rheumatic Diseases*, **22**, 77-90.
- Zvaifler, N. J. (1974). Rheumatoid synovitis: an extravascular immune complex disease. *Arthritis and Rheumatism*, **17**, 297-305.