Brachial plexitis complicating disseminated gonococcal infection

Bassam Maroun, David Rimon and Leon Cohen

Department of Internal Medicine B., Lady Davis Carmel Hospital, 34362 Haifa, Israel.

Summary: A patient with brachial plexitis associated with disseminated gonococcal infection is presented. This is, to the best of our knowledge, the first case to be reported of this association.

Introduction

Brachial plexitis (brachial plexus neuropathy) represents a distinct clinical entity with characteristic physical and electromyographic features. The pathogenesis is unknown, although many cases are associated with infectious diseases or surgery.¹

Gonococcal infection has variable clinical manifestations ranging from otherwise asymptomatic urethral discharge to disseminated infection with cardiac and central nervous system involvement.² Brachial plexitis has not been reported previously in association with disseminated gonococcal infection.

Case report

A 29 year old man was admitted to the hospital because of arthralgia and minimal urethral discharge following extramarital intercourse. One month earlier he had fever and chills for 2 days, followed by pain and tenderness in the fourth and fifth metacarpophalangeal joints of left hand. One week later, swelling, pain and tenderness appeared in the right knee joint and he was admitted to another hospital where he developed severe aching pain, tenderness and weakness about the left shoulder with limitation of movement in all directions. Within one week, the pain in the left shoulder subsided but weakness became increasingly apparent. The knee joint became free of pain and the patient was discharged with the diagnosis of 'bursitis of left shoulder'.

During the two weeks before the present admission, the patient noticed numbness over the outer side of the left arm. He also gave a history of an intermittent urethral discharge together with pustules over both thighs for a month.

Examinations revealed normal temperature, and pustules on thighs and chest. Warmth and tenderness without associated effusion were present in the left wrist and right knee. Mild atrophy and severe paresis of the left deltoid, supraspinatus, infraspinatus and serratus anterior muscles were noticed. A small area of hyposthaesia was present over the outer surface of the arm. A yellowish urethral discharge was observed.

Erythrocyte sedimentation rate, blood count, kidney and liver function tests and serum complement were all normal. Antinuclear antibody, Latex and Rose Waaler tests, complement fixation tests for Epstein-Barr virus, cytomegalovirus, mycoplasma and toxoplasma were all negative. Enzyme-linked immunosorbent assay (ELISA) for human immunodeficiency virus was non-reactive. Microscopic examination of urethral discharge yielded *Neisseria gonorrhoea*. X-rays of the chest, shoulders, knees, wrists, hands, feet and cervical spine were normal. Cerebrospinal fluid revealed no abnormal findings and gallium scan was normal.

Electromyography and conduction studies in motor and sensory fibres of the shoulders and arms were performed. The left side demonstrated fibrillation potentials and positive waves in the deltoid, supraspinatus, infraspinatus and serratus anterior muscles. Polyphasic waves without interference were observed by active movement. The biceps and first interosseus muscles showed no signs of denervation. Nerve conduction velocities between the wrist and elbow were reduced by 40% and between elbow and axilla by 20%.

The patient was treated with penicillin -G. Within weeks the numbness subsided completely and weakness of shoulder muscles disappeared gradually by 4 months. A second electromyography and conduction studies were performed and showed no abnormality.

Correspondence: Professor L. Cohen, M.D.
Accepted: 11 August 1988

Discussion

Brachial plexitis was first described as a distinct clinical entity in 1943 by Spillane³ under the name 'localized neuritis of the shoulder girdle'. Numerous case reports and reviews of large series of patients have since been published.^{1,4,5-9} The aetiology and incidence remain unclear.

This disease is characterized by a sudden onset of severe pain around the shoulder girdle with weakness and wasting of the pericapsular muscles. On subsidence of the pain, motion improves but muscle weakness becomes apparent, followed within several weeks by atrophy of the involved muscle group. Diaphragmatic paralysis has also been reported.¹⁰ The sensory loss is usually mild. Bilateral involvement was noticed in about 30% of cases and recurrent attacks affecting the same shoulder may occur.¹

Brachial plexitis affects mainly adults in the third to the sixth decades and male predominance has been noticed.¹¹ Parsonage *et al.*¹ found that nearly half the patients have antecedent illnesses. These include infections such as infectious mononucleosis,^{11,12} toxoplasmosis,¹³ mycoplasma pneumonia,¹⁴ thoracic

actinomycosis,⁶ salmonellosis,⁷ malaria,¹ typhoid fever¹ and, recently, acute infection with the human immunodeficiency virus.⁸ Also implicated are surgical operations,¹ polyarteritis nodosa,⁹ systemic lupus erythematosus,¹⁵ subclavian axillary thrombosis¹⁶ and following foreign serum injections.¹¹ Some authors theorize that a hypersensitivity reaction rather than direct involvement by the underlying disease is responsible for this form of neuropathy,^{17,18} but no immunological mechanisms have been demonstrated.

Despite the severity of the initial pain and paralysis, full recovery is the rule, beginning within a month following the initial symptoms, but complete functional recovery may take up to several years.⁴

The patient under discussion demonstrated classical history, clinical features and neurological findings consistent with the diagnosis of brachial plexitis. He was treated with penicillin and physiotherapy; re-examination 4 months after discharge from hospital revealed normal physical and neurophysiological findings. To our knowledge, no previous report has been published of brachial plexitis associated with disseminated gonococcal infection.

References

1. Parsonage, M.J. & Turner, J.W.A. Neuralgic amyotrophy, the shoulder-girdle syndrome. *Lancet* 1948, **i**: 973-978.
2. James, P.O., Don, L.G. & Peter, A.R. Disseminated gonococcal infection: a prospective analysis of 49 patients and a review of pathophysiology and immune mechanisms. *Medicine* 1983, **62**: 395-405.
3. Spillane, J.D. Localized neuritis of the shoulder-girdle: A report of 46 cases in the MEF. *Lancet* 1943, **ii**: 532-535.
4. Turner, J.W.A. & Parsonage, M.J. Neuralgic amyotrophy (paralytic brachial neuritis) with special reference to prognosis. *Lancet* 1957, **ii**: 209-212.
5. Dillin, L., Hoaglund, F.T. & Scheck, M. Brachial neuritis. *J Bone Joint Surg* 1985, **67A**: 878-880.
6. Samuel, L.S., Jr. & Rodney, H.L. Thoracic actinomycosis presenting as a brachial plexus syndrome. *Thorax* 1985, **40**: 74-75.
7. Neundorfer, B., Claus, D. & Waller, D. Brachial neuritis in salmonellosis. *J Neurol* 1984, **231**: 198-199.
8. Leonard, H.C., Max, R.P., Kerry, H.L., Belinda, Y.L. & Colleen, S. Acute infection with the human immunodeficiency virus (HIV) associated with acute brachial neuritis and exanthematous rash. *Ann Intern Med* 1987, **107**: 849-851.
9. Allan, S.G., Towla, H.M.A., Smith, C.C., Downie, A.W. & Clark, J.C. Painful brachial plexopathy: an unusual presentation of polyarteritis nodosa. *Postgrad Med J* 1982, **58**: 311-313.
10. Cape, C.A. & Fincham, R.W. Paralytic brachial neuritis with diaphragmatic paralysis. Contralateral recurrence. *Neurology* 1965, **15**: 191-193.
11. Tsairis, P., Dyck, P.J. & Mulder, D.W. Natural history of brachial plexus neuropathy. *Arch Neurol* 1972, **27**: 109-117.
12. Schnell, R.B., Dyck, P.J., Bowie, E.J.W., Klass, D.W. & Taswell, H.F. Infectious mononucleosis: neurologic and EEG findings. *Medicine (Baltimore)* 1966, **45**: 51-63.
13. Tejero, L.J. & Sauto, C.J.M. Adult toxoplasmosis: considerations on a case with associated bilateral brachial plexitis. *Rev Clin Esp* 1970, **119**: 445-448.
14. Lezer, R.J. & Kalavsky, S.M. Central nervous system disease associated with *Mycoplasma pneumoniae* infection: report of five cases and review of the literature. *Pediatrics* 1973, **52**: 658-668.
15. Bloch, S.L., Jarrett, M.P., Swerdlow, M. & Grcyzel, D.W. Brachial plexus neuropathy as the initial presentation of systemic lupus erythematosus. *Neurology* 1979, **29**: 1633-1634.
16. Zahu, C.A. & Wilson, J.J. Association of subclavian-axillary vein thrombosis with brachial neuritis. *Can Med Assoc J* 1986, **135**: 132-133.
17. Wyburn-Mason, R. Brachial neuritis occurring in epidemic form. *Lancet* 1941, **ii**: 662-663.
18. Turner, J.W.A. Acute brachial radiculitis. *Br Med J* 1944, **2**: 592.