Localized Cervical Extradural Abscess

Case Report

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Extradural abscess of the spinal canal, whether due to hematogenous spread of infection from a distant focus or to
direct extension from a nearby source, usually an osteomyelitis of the adjacent vertebrae, is an extremely serious but fortunately un-
common condition. Up to 1946, Rankin and Flothow\textsuperscript{15} were able to collect only 225
cases from the world literature. The majority of abscesses have been reported at the thoracic and lumbar levels, the cervical spine rarely being involved. The morbidity and mortality in this disease have been extremely high.

We are reporting the successful treatment of a patient who was quadriplegic as a result of a localized cervical epidural abscess.

Case Report

A 33-year-old truck-driver was transferred to this hospital on January 4, 1961, because of the acutely progressive development of quad-
riplegia. In November, 1960, a furuncle in the occipital scalp had healed spontaneously but was followed in early December by a persistent generalized illness characterized by a high fever (103\textdegree F), anorexia, vomiting, and loss of weight. A week later his neck became stiff and painful to move. During the week before admission, while in another hospital, paresis of the right arm progressed in a counterclockwise fashion to complete quadriplegia. Three days before transfer, urinary retention and marked dyspnea appeared.

Examination. The patient was acutely ill, cyanosed, dehydrated, and quite confused. The blood pressure was 110/70 mm Hg, pulse 100/min and regular, temperature 99\textdegree F, and respirations rapid, shallow, and labored, with paralysis of the diaphragm and intercostals on the right side. The neck was rigid, painful, and very tender over the midcervical spine. There was a marked spastic quadri-

![Fig. 1. Lateral radiograph of the cervical spine showing the irregular and moth-eaten appearance of the laminae and spine of third vertebra.](image-url)
myelogram on the night of admission demonstrated complete block at the C4-5 level (Fig. 2 left). Cerebrospinal fluid obtained at lumbar puncture was under low pressure, sterile, and xanthochromic; there were 10 lymphocytes/cu mm, and the protein was 1700 mg%.

Operation. Surgical decompression of the cervical cord was undertaken immediately. To control head and neck movements, Crutchfield tongs were inserted and 8 lbs of traction applied. The patient was then transferred to a Foster bed, and, under general endotracheal anesthesia, a posterior cervical exposure from C-3 through C-5 was performed. Pus exuded freely between the laminae of C-3 and C-4. The posterior elements of these vertebrae, of C-3 in particular including its articular facets, were grossly involved with osteomyelitis. The dural pus, granulation, and infected bone tissue were thoroughly debrided; the articular facets were spared. The process did not appear to extend anterior to the dural sac. After copious irrigation and debridement, the wound was closed without drainage; the latter was intended to facilitate postoperative nursing care. A tracheotomy was performed to alleviate the marked respiratory distress.

Postoperative Course. Initially the patient was kept on the Foster bed. He was given large doses of Staphcillin for a period of 3 weeks, since coagulase positive Staphylococcus aureus, sensitive to this antibiotic, had been cultured from the pus. Progressive neurological recovery began from the first postoperative day. The skull tongs and tracheotomy tube were removed on the eleventh day with the return of function in the muscles of respiration. Bladder function was normal by the twenty-third day, and active rehabilitation and mobilization were begun at this time. A Minerva jacket with a posterior window to allow inspection of the wound was now used to stabilize the cervical spine. Five weeks postoperatively the wound became red, tender, and indurated and had to be opened, drained, and packed. It had healed.
uneventfully by second intention 1 month later. A myelogram performed 1 month before discharge showed a free flow of medium (Fig. 2 right).

At the time of discharge 5 months after surgery, no muscle weakness was detectable, and slight hypesthesia for touch in the fingertips constituted the only sensory deficit. The limbs were moderately spastic.

Spontaneous fusion at the involved levels had occurred 3 months after his hospital discharge (Fig. 3), and his Minerva jacket was removed at that time. At present, some 6 years later, the patient has pain-free neck movements to within 80% of the normal range and slightly hyperactive tendon reflexes, the only residual signs of his quadriplegia. He has driven his truck full-time for the past 5 years.

Discussion

Although there had been a few isolated reports earlier, it was not until 1926 when Dandy demonstrated the constant, characteristic, pathognomonic features of this syndrome that the concept of extradural spinal abscess became a distinct clinical entity. The fact that more than 50% of these cases are paralyzed at the time of diagnosis emphasizes that clinical awareness of this disease is still not as widespread as it should be.

Experience has shown that the cervical area is the rarest site of involvement. Gasul and Jaffe could find only two instances of localized cervical epidural abscess among 67 cases reviewed. This is not surprising for, as Dandy has shown, the epidural space is merely potential at the cervical level but is considerably more substantial at lower levels.

The mortality and morbidity of spinal extradural abscess, although improving, continue to be high. Even today, more than one third of those who survive their illness are left with major neurological deficits, chiefly paralysis. Cervical abscesses seem to exert the most devastating effects. Some 80% of the patients have died while 50% of the survivors have been left with crippling quadripareis. The respiratory paralysis associated with cervical cord compression contributes to these poor results and should, we believe, be obviated by an early prophylactic tracheotomy.

The duration and the extent of the neurological deficit at the time of surgical intervention continue to be the most important factors in determining the degree of postoperative morbidity. Heusner obtained complete recovery in all patients paralyzed
for less than 24 hours but salvaged no useful return of neurological function if paralysis had been present for 36 hours; mortality was also limited to the latter group. Our patient’s excellent recovery was most unusual in this respect.

Early diagnosis is therefore of paramount importance, and epidural abscess should be considered in any patient with a history of recent infection who subsequently develops a febrile illness with localized pain in the back. Demonstration of a subarachnoid block at lumbar puncture is confirmatory. We believe myelography is valuable in defining the longitudinal extent of the disease. Immediate surgical decompression is mandatory, for the disease can advance with tragic suddenness. Preferably, the wound should be allowed to granulate in. Large doses of appropriate antibiotics should be used as an adjunct to surgery, for a significant number of these patients have succumbed to overwhelming sepsis in spite of aggressive and adequate surgical decompression.

Summary

We have reported the unusual case of a patient who made a total functional neurological recovery from an initially unrecognized, localized, cervical epidural abscess. The mortality and the morbidity of this disease are still inordinately high. Only early diagnosis and prompt, aggressive, surgical and antibiotic treatment offer any hope of success in the handling of this potentially curable disease.

References