Tetanus Antitoxin and Perceptive Deafness

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Introduction:

Serum administration is seldom embraced by any neurological complication and its rarity marked by smallest number although being statistically insignificant, serves an important landmark for our records.

In general neurological complications have been categorised with serum sickness of intermediate type of hypersensitivity following injections. It is in no way related to the antibody content of the injected serum, but is a response to the foreign protein as such, which is usually horse serum. The reaction may occur within two hours of the injection of the serum and upto 24 days after, though an incubation period of 8—12 days is commonest. Among the immediate reactors, there is often evidence of previous treatment with horse serum. The illness is variable in duration, protein in symptoms, and seldom serious, though it may be associated with severe discomfort. The disease is rarely fatal. The nervous system is affected, though rarely. The commonest lesions occur in the 5th and 6th cervical nerves. Neuritis is followed by flaccid paralysis of the muscles with a slow and, in greater proportion of cases, a complete recovery. Both motor and sensory nerves are affected. The neuritis may affect one or many nerves, and in some cases the lesions are more central, and may even be cerebral. The neuritis is usually ascribed to urticarial oedema of the nervous tissue.

Review of literature:

A review of various complications and serum sickness with various sera, tetanus antitoxin attains a high incidence will be readily unfolded.

World literature shows that peripheral nerves are most commonly involved although cortical damage and isolated or multiple cranial nerve palsies find their way into it, yet affections of the auditory nerve as a whole or its branches are extremely rare after tetanus antitoxin.
Amberg and Hewitt (1935) was first to report a case of clinical tetanus in a body of 17, who developed serum sickness and irreversible deafness six days after treatment with tetanus antitoxin.

Cutter also reported a similar incidence in a boy of 14, who underwent intensive therapy with tetanus antitoxin. At the outset, deafness was partial but progressed to profound deafness although it improved a little few days after.

A critical appraisal of these two cases will fail to hold the serum responsible for deafness because it cannot be established whether the disease entity itself has been the cause of hearing loss. It is not known if tetanus could produce auditory nerve damage. In view of foregoing facts serum may be the probable cause of deafness in these cases.

McCready (1938) also reported severe labyrinthitis in a boy of 15 years, nine days after prophylactic use of antitoxin (3,000 units), and 5 days later he recovered with absolute deafness as was confirmed by audiometric examination with dead labyrinth.

Taylor (1942) reported a case of a man 51 years old, who had received 5,000 units of tetanus antitoxin prophylactically for a minor laceration. Five days after serum sickness and within six hours of the serum reaction severe tinnitus ensued, followed by bilateral perceptive deafness of high degree.

Berger and Sachs (1953) reported development of serum sickness in a female of 23 years following administration of 3,000 units of tetanus antitoxin for a small laceration. A week after she developed sudden bilateral deafness and persistent tinnitus.

Pantazopoulos (1965) also reported in a boy of 16 development of total deafness sixth day after serum sickness following administration of 3,000 units of tetanus antitoxin.

Case Report:

Zahoor, a past middle aged man of 40 years was first seen in our Out patient Clinic on 7th January, 1966 complaining of recent deafness. He stated that fourteen days before, after crush injury of the left hand, he received a dose of 3,000 units of tetanus antitoxin prophylactically. Five days later he developed a swelling at the right arm, the site of injection, generalised rashes over the body with moderate rise in temperature besides itching, pain in the joints and enlargement of axillary lymph nodes. Following day he experienced nausea, vomiting, giddiness and staggering of gait and by the evening intolerable ringing in the ears with a rapidly progressing hearing loss. The patient was treated with Longiffin and Delta-Cortril as soon as the rashes appeared. Symptoms of serum sickness disappeared completely after 4 days of treatment and the phenomenon of post-labyrinthitis also improved considerably out the deafness persisted.

I examined the patient 14 days after the injection of tetanus antitoxin i.e. 8 days after the development of the deafness. No past personal or familial history related to hearing was forthcoming. E.N.T. examination showed no abnormality. Eustachian tubes were patent and Valsalva test...