



The National Antivenom and Vaccine Production Center

Polyvalent Scorpion Antivenom (Equine)

The NAVPC polyvalent scorpion antivenom is a refined and highly purified preparation containing the $F(ab')_2$ fractions of the immunoglobulins raised against scorpion venom.

Preparation

The antivenom is prepared by hyperimmunizing healthy Arabian horses using gradually increasing doses of Saudi scorpion venoms and immunomodulators. Sera of high titre are purified by different stages of salt fractionation and refined by pepsin digestion. The resulting $(Fab')_2$ fragments are clarified by gel adsorbents and multistage filtration followed by dilution to the required potency.

Composition

One ml ampoule containing:

Purified refined scorpion antivenom neutralizing	50 mouse LD ₅₀ (minimum)
m-Cresol	3.5 mg (maximum)
Physiological saline	O.S. to 1.0 ml

Spectrum of Activity

The polyvalent antivenom is highly specific in neutralizing the venoms of the Saudi yellow scorpion (*Leiurus quinquestriatus*) and black scorpion (*Androctonus crassicauda*). The antivenom has also a wide spectrum of activity and can neutralize the venoms of many of the Middle East and North African scorpions including:

- Buthus arenicola*
- Buthus minax*
- Buthus occitanus*
- Leiurus quinquestriatus hebraus*
- A. amoreuxi*

Packaging

Pack of 10 x 1 ml ampoules

Mode of Action

Immunologic interaction with the antigenic sites of scorpion toxin resulting in blocking of the active toxicologic sites in the toxin molecules. Also, through displacement of the toxin molecules from their binding sites at the voltage sensitive Na^+ channels and the K^+ channels.

Treatment of Scorpion Stings

Effective treatment depends on the intravenous injection of the antivenom as soon as possible after the scorpion sting and in appropriate doses. Both adjunctive and alternative drug therapy were advocated with variable degrees of success. Antivenom therapy, however, when properly conducted is unsurpassed in decreasing the morbidity and mortality from dangerous scorpion stings.

Administration and Dosage

Five 1 ml ampoules are to be diluted in 20-50 ml half normal saline and infused intravenously slowly over a period of 30 minutes. The dose is to be repeated if necessary, up to 20 x 1 ml ampoules. One quarter normal saline is to be used for infants and children up to 6 years. Although of questionable value, a BESREDKA test should be carried out before administering the antivenom. This is done by injecting 0.1 ml of the antivenom intradermally. In case of positive BESREDKA test or proven sensitivity to horse serum, a GOAT polyvalent scorpion antivenom may be used. **CHILDREN MUST BE GIVEN THE SAME DOSE OF ANTIVENOM AS ADULTS.**

Side Effects, Toxic Reactions and Antidotes

The NAVPC polyvalent scorpion antivenom is a refined highly purified preparation. Despite its low protein content and high purity both early and late allergic reactions can occur in susceptible patients. Because of the pharmacologic effects of scorpion venom in causing massive release of tissue and medullary catecholamines, the incidence of such allergic reactions is rather low. The early (anaphylactoid) reactions are treated by the

classical therapeutic measures using adrenaline, hydrocortisone and antihistamines. The late (delayed) reactions respond well to treatment by prednisolone orally.

Adjunctive Therapy for Scorpion Envenoming

- High fever : Water sponges + acetaminophen suppositories.
- Vomiting : Chlorpromazine 0.5 - 1 mg/kg or promethazine 0.5 - 1 mg/kg i.m.
- Convulsion: Diazepam i.v slowly.
- Local pain : 1% zycocaine infiltration at site of sting (0.5 ml maximum)

Storage

The NAVPC polyvalent scorpion antivenom should be stored at $4 \pm 2^\circ C$ in the dark. The shelf life in these conditions is 3 years.

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