

## APPROVED NAME

**SEA SNAKE ANTIVENOM**

AUST R 74901

## DESCRIPTION

SEA SNAKE ANTIVENOM is prepared from the plasma of horses immunised with the venom of the sea snake *Enhydrius schistosus*. Each vial contains 1,000 units of antivenom. The product also contains phenol, sodium chloride and other equine plasma proteins in an aqueous solution. SEA SNAKE ANTIVENOM has been shown to be effective not only against the venom of *Enhydrius schistosus* but, to a varying degree, against the venoms of a wide variety of sea snakes present in the northern Australian waters.

## PHARMACOLOGY

Sea snakes are abundant throughout the warmer waters of the Indian and Pacific oceans. They require a sea temperature of at least 20°C and are therefore common in Australian tropical waters although there has been one confirmed sea snake bite at a Sydney beach.

The venom of the sea snake is very potent but in many cases of human bites, little venom is released. In a study of 101 cases in Malaysia, only 22% of bites were considered to be serious. However, 6 of the 11 who were seriously envenomed died before antivenom was available and 2 of 11 after introduction of the antivenom.

Sea snake bites can occur from inadvertently standing on the snake or, more commonly, they occur as an occupational hazard to fishermen sorting fish in their nets. The venom of the sea snakes contains potent neurotoxins that can cause muscle paralysis and respiratory failure leading to death. The venom also has myolytic properties. The muscle destruction can cause myalgia and renal failure. Hyperkalaemia can be severe. Myolysis has been demonstrated in monkeys with considerable elevation of creatinine kinase levels. There is also elevation of serum glutamic-oxaloacetic transaminase (SGOT) levels in humans which can be used to determine or monitor the degree of envenoming.

As there is considerable similarity between the toxins of the sea snakes and the Australian elapids, TIGER SNAKE ANTIVENOM is often effective in cases of sea snake envenoming and may be used if SEA SNAKE ANTIVENOM is not available.

## INDICATIONS

For the treatment of patients who exhibit manifestations of systemic envenoming following a bite by a sea snake.

## CONTRAINDICATIONS

There are no absolute contraindications, but the product should not be used unless there is clear evidence of systemic envenoming with the potential for serious toxic effects.

(See PRECAUTIONS for use of SEA SNAKE ANTIVENOM in patients with a known allergy).

When medicinal products prepared from animal plasma are administered, infectious diseases due to the transmission of infective agents cannot be totally excluded. This applies to pathogens of hitherto unknown origin. This possibility must always be considered and should be conveyed, whenever possible, to patients who may receive the product. Historically there have been no known recorded cases of transmission of viruses by this product.

Wound bases of sea snake bites are painless with no local swelling. A row of small teeth marks may be seen. Intense pain from underwater trauma is more likely to be due to a fish than a sea snake.

Two to two thirds of those bitten by a sea snake have to be hospitalised. In the vast majority of cases, symptoms often develop soon after the bite, but in some, the potentially dangerous effects may be delayed for several hours. It is therefore essential to observe all those who have been bitten by a sea snake for at least 4 hours.

If the limb has been immobilised and a firm bandage applied, removal of the bandage and splint may precipitate the systemic effects of the venom. The bandage and splint should not be removed until the patient is in hospital with appropriate antivenom treatment available. As immobilisation causes local retention of the venom, the requisite period of observation of the patient for a minimum of 4 hours commences when the splint and bandage are removed.

Severe cases of systemic envenoming should be managed in an intensive care unit, if possible.

As this product is prepared from animal plasma, severe allergic reactions may follow, including anaphylactic shock. A syringe loaded with 1:1,000 adrenaline must be available during antivenom therapy. Anaphylactic reactions may be more likely to occur in those who are atopic or have previously received equine serum. This would include patients who have previously received equine Tetanus Antitoxin (prior to 1974 in Australia). Some authorities have advocated premedication with subcutaneous adrenaline and intravenous antihistamine, particularly in those patients who are known to be at risk, but such use is controversial.

The results of skin testing to determine patients who may have an allergic reaction are not satisfactory and should not be undertaken.

Antivenoms may bind complement and produce an anaphylactoid reaction in patients who have had no previous contact with equine protein.

The risk of such a reaction can be reduced by adequate dilution of the antivenom (1:10 in adults and 1:5 in small children) prior to infusion (see also DOSAGE AND ADMINISTRATION).

Symptoms and signs of anaphylaxis include pallor, tachycardia, urticaria, angioedema, cough and dyspnoea due to laryngeal oedema or bronchospasm. Nausea, vomiting and abdominal pain are less common. Typical signs of shock may develop in 1 to 2 minutes and the patient may convulse, become unresponsive and die.

Should anaphylaxis occur, cease administration of antivenom, administer oxygen and inject adrenaline 1:1,000 intramuscularly at the following dose rates: small adults (<60 kg) 0.25 mL, average adults (50-100 kg)

0.5 mL, large adults (>100 kg) 0.75 mL. For children (to age 12) use 1:10,000 and inject 0.25 mL per year of age. If there is little or no response to the initial intramuscular dose of adrenaline, administer the same dose (diluted to 1:10,000) slowly into an intravenous line. Repeat at 5 minute intervals depending on response. In severe cases, intravenous antihistamine and intravenous corticosteroids may also be given to reduce the chance of late reactions, but have a slower onset of action than adrenaline. Further administration of antivenom should be considered in the light of the relative problems of envenoming and anaphylaxis.

Delayed serum sickness can occur following the use of animal derived antivenoms. The most common manifestations include fever, cutaneous eruptions, arthralgia, lymphadenopathy and albuminuria. Less commonly anuria, hepatitis, neuropathy and vasculitis can occur. This condition usually appears 8 to 10 days after the use of antivenom but can occur as soon as 12 hours after a second injection of a similar animal protein.

The incidence of serum sickness is greater with larger volumes of antivenom.

#### Use in pregnancy

There is no information on the safety of this product in pregnant women.

#### Use in lactation

No information is available on the use of this product during lactation.

#### ADVERSE REACTIONS

As the product is of animal origin, severe allergic reactions can occur (see PRECAUTIONS). There have been 42 spontaneous reports in Australia of hypersensitivity to snake antivenoms produced by CSL between 1978 and 2003 and of these, the only adverse report involving SEA SNAKE ANTIVENOM has been of a mild rash in a 2 year old child. Publications in which adverse events to all snake antivenoms are reported give rates ranging from 5 to 39%. It should be borne in mind that although the antivenom has been in use for many years the number of treated cases is small.

Following the treatment of snake bite in Australia, there were 3 deaths which were attributed to serum reactions to snake antivenoms between 1952 and 1961. No deaths specifically attributed to the use of snake antivenoms have been reported since that time.

As the recording of adverse events was by means of forms which were, in most cases, returned within 24 hours of administration of the antivenom, the actual incidence of serum sickness is unknown.

#### DOSAGE AND ADMINISTRATION

A large proportion of people bitten by sea snakes have minimal or no effects from the bite and antivenom is unnecessary. When there is evidence of systemic envenoming from a sea snake, the contents of one vial (1,000 units) should be administered slowly by intravenous infusion after dilution with Hartmann's Solution or normal saline. The dose is the same for adults and children. The antivenom should be diluted 1 in 10, although in small children a dilution of 1 in 5 may be more appropriate to avoid fluid overload.

In cases of severe envenoming when myalgia, muscle weakness, trismus, prosis and ophthalmoplegia are present, an initial dose of 3,000 to 4,000 units should be given and up to 10,000 units may be required altogether. In less severe cases a total of 3,000 units will control most patients.

Some authorities have advocated premedication with 0.25 mL of 1:1000 adrenaline subcutaneously and intravenous antihistamine to reduce the chance of anaphylactic shock, particularly in those patients who are known to be at risk, but such use is controversial (see PRECAUTIONS).

If the patient has the affected limb immobilised, the splint and pressure bandage should not be removed until the patient is in a unit where full resuscitation measures and antivenom are available.

Severe cases of systemic envenoming should be managed in an intensive care unit if possible.

The patient must be monitored for at least 6 hours after the conclusion of the antivenom infusion.

Before starting the infusion of antivenom, a separate syringe should be loaded with 1:1,000 adrenaline, as anaphylactic reactions can occur rapidly (see PRECAUTIONS).

Should an anaphylactic reaction occur, cease administration of antivenom, administer oxygen and inject adrenaline 1:1,000 intramuscularly at the following dose rates: small adults (<50 kg) 0.25 mL, average adults (50-100 kg) 0.5 mL, large adults (>100 kg) 0.75 mL. For children (to age 12) use 1:10,000 and inject 0.25 mL per year of age. If there is little or no response to the initial intramuscular dose of adrenaline, administer the same dose (diluted to 1:10,000) slowly into an intravenous line. Repeat at 5 minute intervals depending on response.

As delayed serum sickness is relatively common following the use of large volumes of foreign protein, it is advisable to administer a corticosteroid either by a single intravenous injection or orally for 4 to 5 days to children and to those receiving multiple doses of antivenom.

It may occasionally be necessary to treat both envenoming and anaphylaxis simultaneously.

SEA SNAKE ANTIVENOM contains no antimicrobial preservative. Use once only and discard any residue.

#### OVERDOSAGE

No information is available on overdosage.

#### PRESENTATION

SEA SNAKE ANTIVENOM is available as vials containing 1,000 units in 15 to 35 mL of aqueous solution.

#### STORAGE

SEA SNAKE ANTIVENOM should be protected from light and stored between 2 and 8°C. Do not freeze.

#### NAME AND ADDRESS OF SPONSOR

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