INSTITUTO CLODOMIRO PICADO
UNIVERSIDAD DE COSTA RICA

ECHITAB-PLUS-ICP

POLYSPECIFIC ANTIVENOM
LIQUID
(Anti-viperid, anti-elapid)

POTENCY: each 10 mL vial neutralizes not less than 30 mg. of *E. ocellatus* venom, 20 mg of *B. arietans* venom and 2 mg of *N. nigricollis* venom.
Excipients q.s. 10 ml

Composition:
Equine immunoglobulins q.s. so that each milliliter neutralizes not less than 3.0 mg of *Echis ocellatus* venom, 2.0 mg of *Bitis arietans* venom and 0.2 mg of *Naja nigricollis* venom.

Indications:
Effective in envenomations induced by African viperid and some elapid snakes. It is NOT EFFECTIVE in envenomations by mambas and neurotoxic cobras.

Presentation and storage:
This antivenom is distributed in its liquid form in 10 mL vials. This product must be stored in refrigeration (2-8 ºC) and must be used immediately after opening.

Stability:
The expiration date of this product after its manufacture is of one year and six months which is important to verify; also a visual inspection of the product is recommended. In case of observing excessive turbidity in the solution or if the product has expired, it must be discarded.

Treatment in the field:
(1) The patient has to be placed in a comfortable position and has to be reassured.
(2) Do not apply tourniquets.
(3) Do not make any incision.
(4) The administration of antivenom in field conditions involves various risks, especially the possibility of an adverse reaction to the horse immunoglobulins. Therefore, administration of antivenom in the field has to be considered only when there is a clear evidence of envenomation (pain, swelling, tissue damage at the site of venom injection, or systemic bleeding) and when the nearest health center is more than 6 hours away.
(5) Before administering the antivenom, it is very important to guarantee that the patient is not allergic to horse immunoglobulins. This is done by reviewing the patient's history of allergy in general and of previous administration of equine-derived sera. In addition, when antivenom is going to be administered in the field, it is necessary to perform a cutaneous hipersensitivity test for the antivenom.

Cutaneous hipersensitivity test:
Antivenom has to be diluted 1:10 with sterile saline solution (a 1:100 dilution has to be considered when the patient's history suggests allergy to equine proteins). Then, 0.1 mL of the diluted antivenom is injected intradermally in the external surface of the arm, in such a way that a small vesicle forms. A positive reaction, evidencing allergy, manifests by the appearance of redness and itching at the injection site within 20 minutes. Patients with very high sensitivity may present systemic allergic manifestations, such as bronchospasm, generalized urticaria or hypotension. It is necessary to keep adrenaline (1:1000) to treat such strong adverse reactions. In case of a positive cutaneous test, antivenom cannot be administered in the field due to the risk of an anaphylactic shock, and the patient has to be transported to the nearest hospital or health center to receive the antivenom. If the cutaneous test is negative, antivenom can be administered. However, there are some cases that present anaphylactic reactions to systemic administration of antivenom even with a negative cutaneous test.

Administration of antivenom in field conditions:
Keep in mind that antivenom can be administered in the field only when the skin test is negative. In field conditions, antivenom has to be administered only by the intramuscular route, previous disinfection of the skin with ethanol. The antivenom dose to be administered by the intramuscular route corresponds to four vials, which should be injected within 15 minutes. Regardless of whether the patient received antivenom in the field or not, he/she needs to be transported to the nearest health center for clinical assessment and following up.

Administration of antivenom in health centers (only for health personnel):
In health centers, antivenom has to be administered by the intravenous route by health staff only. A clinical assessment has to be performed in order to determine whether the patient shows signs and symptoms of envenomation. Envenomations by viperid species (*Echis sp., Bitis sp.*) are characterized by local effects (edema, pain, local bleeding and necrosis in severe cases) and/or by systemic bleeding and clotting disturbances. Envenomations by cytotoxic cobra species (*Naja nigricollis*) are characterized by local necrosis, without systemic bleeding and without coagulation disturbances. In the event of envenomation, a dose of four vials of antivenom has to be administered.

Protocol for antivenom administration in health centers:
(a) Cannulate through an I.V. route.
(b) Dilute the dose of antivenom to be used with 500 mL of physiologic saline solution (200 mL in the case of children, to avoid fluid overload). Start antivenom infusion at a low flow. Keep a close observation of the patient for 20 minutes in order to detect possible early adverse reactions to antivenom administration.
(c) In case there is no evidence of early adverse reactions, increase the flow of antivenom administration in such a way that all the dose is administered within 1 hour.
(d) If there are early adverse reactions (urticaria, hypotension, bronchospasm), stop immediately the infusion of antivenom and administer antihistamines and corticosteroids by the intravenous route; in the case of severe reactions, adrenaline 1:1000 has to be administered subcutaneously. Once the manifestations of the adverse reaction are controlled, restart the infusion of antivenom, as described in point (b).
(e) Bleeding manifestations and clotting disorders have to be controlled within 12 hours of antivenom administration, provided an adequate dose was administered. If local or systemic bleeding persist, or if clotting alterations have not been reverted by this time, an additional dose of 4 vials of antivenom has to be administered, depending on the severity of the envenomation, as indicated above. There are cases in which recurrence of envenomation occurs, i.e. clinical manifestations of envenomation reappear after their initial control. This is due to the delayed absorption of venom from deposits in the tissues and requires an additional administration of 4 vials of antivenom.
(f) The therapy of snakebite envenomation includes, in addition to antivenom administration, a number of ancillary interventions such as: administration of tetanus prophylaxis, administration of antibiotics, and other interventions that depend on the clinical characteristics of each case.
(g) Late adverse reactions to antivenom therapy: Administration of polyvalent antivenom may result in serum sickness within 5 to 20 days in a small percentage of patients. Clinical manifestations of serum sickness include fever, urticaria, arthralgias and lympadenopathy. These reactions are treated with antihistamines and corticosteroids.

Made by:
INSTITUTO CLODOMIRO PICADO
UNIVERSIDAD DE COSTA RICA
SAN JOSÉ, COSTA RICA
TELS.: (506) 2229-0344
(506) 2229-3155
FAX: (506) 2292-0485
E-mail: icp70@icp.ucr.ac.cr