ANAESTHESIA IN THE RIVER TURTLE (CHELONIA)

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ABSTRACT
Surgical anesthesia for chelonia (turtle), weighting between 6-10 kg. Was a achieved with the injectable pentobarbital and ketamine hydrochloride. Induction of duration and recovery of individual turtles.

Limited data are available regarding dosages and responses for injectable anesthetics in many reptiles. The varied results using different dosage levels and routes of administration for pentobarbital and ketamine HCl.

The purpose of the present study was to report anesthetic dosages and responses for turtles.

INTRODUCTION
There are thirteen families of chelonia, containing a round 244 species. Chelonia success is due to a combination of standard reptilian characteristics (Conservation of water and cephalic egg) plus a rigid body wall or shell consisting of upper carapace and lower plastron. This obvious physical adaptation makes clinical examination difficult especially with larger and recalcitrant individuals. (1, 2, 3).

Basic anatomy:

The chelonia have a standard body plan a few obvious to differences to other reptiles. The scapula (shoulder blade) has rotated around the thorax (chest) and lies in a ventral position. The ribs are uniquely modified to form bony plates that comprise the structure of the carapace and plastron.

There are four limbs, each covered in heavy scales. The head is retractable and the cervical vertebrae fuse into the carapacial shell. The tail is used to differentiate the sexes. It is invariably larger in the male with the cloacal orifice located from the tip (8).
The eyes are situated laterally on the head and are protected by a mucous membrane covered 3rd eyelid and two eyelids, only the lower eyelids is mobile. No lachrymal during appears to be present therefore excess overflows from the lower lid.

The appendicular skeleton consists of: front legs: humerus, radius, ulna, carpus and 5 digits ending in claws. Hind limb Femurs, tibia, fibula, tarsus digits and 4 claws. Chelonia have two ventral vena cavae with have an anastomosis roughly at the middle of the abdominal plate.

Chelonia are very tolerant of anoxia and can tolerate high lactic acid levels - Respiratory function in reptiles is controlled by po2 temperature - Therefore maintaining reptiles in a high O2.

Chelonia have a three chambered heart (two atria, one ventricle). The ventricle functionally separates the pulmonary and systemic blood flows at systole.

**MATERIALS AND METHODS**

Turtles used in this study was part of the stock of rivers. The turtles were maintained in concrete tank. Surgical procedure were conducted in a open – air building.

Sodium pentobarbital 30 mg/kg B.W. was administered Iv through the dorsal cervical sinus to 6 turtles. The time need was 30 – 40 second for an approximate 10 – ml injection. But the best dosage of sodium pentobarbital is 8 – 12 mg/kg B.W. IV due to the induction at a bout 14 minute.

Ketamine HEL 40 mg/kg B.W. IP was administered to 6 turtles weighting 6 – 10 kg each tow turtles injectable via IP, IV, Im routes.

The induction time, the length of surgical anesthesia and recovery time was measures in all turtles. The time between administration of the anaesthetic and deep anesthesia. Deep or surgical anesthesia has no voluntary muscular response to surgical procedures.

**RESULTS**

The 3 turtles given sodium pentobarbital were anaesthetized at the rate of 10 – 26 mg/kg of body weight, and 3 turtles approximately 10 mg/kg B.W. induced deep anesthesia, but initial doses varied from it. Correlation between total anaesthetic administered and time of induction for those turtles in which dose lasted 40 – 60 minutes. Total recovery occurred within 4 – 6 hours. Routes and of administration for ketamine HCL varied among 6 turtles. For 4 of totally anesthesia was achieved, occurred within 2 – 10 minutes after final injection and total recovery occurred within 4 hours.
Two turtles indicatable intravenous dose 19-36 mg/kg B.W., other two turtles lm injectable 60 – 80 mg/ kg B.W. and other two turtles give in dose 55 –70 mg/ kg B.W. in deep anesthesia. (All of the 6 turtles give ketamim but in varied routes).

The successful deep anesthesia at dose of routes of Indicatable pentobarbital of ketamina as following.

**Table 1: Parameter for drug used to anesthesia**

<table>
<thead>
<tr>
<th>No. of turtles</th>
<th>Drug</th>
<th>Dosage mg / kg</th>
<th>Route</th>
<th>Induction time</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Sodium Pentobarbital</td>
<td>8 – 12</td>
<td>IV</td>
<td>14 –100</td>
</tr>
<tr>
<td>6</td>
<td>Ketamine HCL</td>
<td>35 – 70</td>
<td>IV</td>
<td>2 – 10</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Results of table -1- indicated that sodium pentobarbital can be used as an effective anesthesia in large turtles species (1, 2). An initial dosage of 10 mg / kg B.W. IV route is suggested but the disadvantage kept out of water for 24 hours until recovery is complete and induction time may be extended up to 60 minutes it generally longer that for ketamine HCL (5).

But ketamine HCl has a rapid induction time, short duration and rapid recovery. It appears surgical induction is often easier than IV injection (3, 6).

The long period of recovery from anesthesia due to very low metabolic rate in chelonia (4, 6, 7).

**Ketamine is probably the anesthetic agent of choice although in dose not produce muscle relaxation.** It may be give in doses of 60 – 80 mg / kg B.W. into glutal muscle. Recovery from a dose of 60 mg / kg B.W., ketamine take up 24 house.
تخدير السلكفة النهرية

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الخلاصة

تم في هذه الدراسة تخدير السلكفة النهرية باستخدام مواد مختلفة (مجموعة من ملاح الباربينورت والكيتامين) كل على حدة، وملاحظة مدى سرعة احداث التخدير والساري طفوه تخدير الجراحي، فترة الافقة. أوران السلاحف 6-10 كجم تم استخدام طرق اعطاء مختلفة، الكيتامين تخدير م(paths مع الباربينورت. الفرض من هذه الدراسة هو تسجيل الجريدة النهرية و مدى الاستجابة للمخدر المستعمل.

REFERENCES