Kid Goats are More Sensitive to Penicillin Overdose

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Abstract: Hipracilina suspension contains benzyl penicillin (200,000 IU), dihydrostreptomycin sulfate (250 mg), chlorpheniramine maleate (15 mg) and dexamethasone sodium phosphate (0.6 mg). This drug is used for treatment infection in respiratory, urinary, reproductive, forelimb and hind limb systems in cattle, goats, sheep and rabbits. Hipracilina is intramuscularly injected at dose 1 mL/10 kg body weight once or twice in day for 3 days. Hipracilina was clinically used at dose 1.5 mL/B.W in kid goats. The kids had 6 days age and 3 kg weight. These animals had diarrhea after high milk eating. One kids died after 15 min. Fourteen kids had signs such as ataxia, depression, hind limb paralysis, hyperesthesia, mydriasis, decreasing of respiratory rate, tachycardia and falling. Two kids died after 4 h. Supportive treatment was carried by ORS powder and furosemide administration. The kids returned to normal state after 24 h. In another experimental study we divided kids 3 groups which received A: benzyl penicillin, B: benzyl penicillin+dihydrostreptomycin, and C: chlorpheniramine. Group A and B showed depression. Thus, Hipracilina can be toxic in kid goats at nearly 4-5 folds dose. It seems that this toxicity is related to penicillin compound.

Key words: Kid goats, overdose, penicillin, toxicity

INTRODUCTION

The combination of procaine penicillin G and dihydrostreptomycin acts additive and in some cases synergistic (Riviere and Papich, 2009). Procaine penicillin G is a small-spectrum penicillin with a bactericidal action against mainly Gram-positive bacteria like Campylobacter, Clostridium, Corynebacterium, ErysipelothrHaemophilus, Listeria, Pasteurella, penicillinase negativ Staphylococcus and Streptococcus sDihydrostreptomycin minoglycoside with a bactericidal action against mainly Gram-negative bacteria like E. coli, Klebsiella, Pasteurella, Salmonella and Staphylococcus spp. Administration of therapeutic dosages of penicillin G can result in hypersensitivity reactions. Hipracilina suspension contains benzyl penicillin (200,000 IU), dihydrostreptomycin sulf (250 mg), chlorpheniramine maleate (15 mg) and dexamethasone sodium phosphate (0.6 mg). This drug is used for treatment infection in respiratory, urinary, reproductive, forelimb and hind limb systems in cattle, goats, sheep and rabbits. Hipracilina is intramuscularly injected at dose 1 mL/10 kg body weight once or twice in day for 3 days. All drugs injected intramuscularly at single dose.

We observed toxicity sings from high dose of Hipracilina in kid goats and decided evaluate its compounds in kid goat at experimental study. Thus, present report seems to be first poisoning of kid goat with Hipracilina.

MATERIALS AND METHODS

Hipracilina is intramuscularly injected at dose 1 mL/10 kg body weight once or twice in day for 3 days. Hipracilina was clinically used at dose 1.5 mL/B.W in kid goats. The kids had 6 days age and 3 kg weight. These animals had diarrhea after high milk eating.

In another experimental study we divided kids 3 groups. Group A had 2 days age and received benzatine benzyl penicillin at dose 300,000 IU (5 times more than recommended dose). Group B had 5 days age and received procaine benzyl penicillin at dose 300,000 IU (5 times more than recommended dose) + dihydrostreptomycin at dose 300 mg (5 times more than recommended dose). Group C had 7 days age and received chlorpheniramine at dose 25 mg (5 times more than recommended dose).

RESULTS

One kids died after 15 min poisoning with Hipracilina. Fourteen kids had signs such as ataxia, depression, hind limb paralysis, hyperesthesia, mydriasis, decreasing of respiratory rate, tachycardia and falling (Fig. 1). Two kids died after 4 h (Fig. 2). Supportive
treatment was carried by ORS powder and furosemide administration. The kids returned to normal state after 24 h. We did not any death in experimental study. Group A and B showed depression in experimental study. It seems the Hipracilina was probably administrated more than 5 times of recommended dose in clinical cases.

**DISCUSSION**

Penicillin is safe antibiotic in animals. But the age of animals or penicillin overdose may cause toxic effects. At very high doses of benzylpenicillin, convulsions and other signs of toxicity to the central nervous system may occur. This drug can inhibit GABA (an inhibitory neurotransmitter) and cause excitement and seizures at high dose (Riviere and Papich, 2009). Disturbances of blood electrolytes may also follow the administration of large doses and with prolonged high doses coagulation disorders, neutropenia and other blood disorders may occur. Procaine penicillin G can elicit excitatory response (Washburn et al., 2009).

Goat metabolized medications differently than other animals. Drugs clear faster in goats (Sierra et al., 2009). Thus, goats require higher doses of drugs for effective treatment (de la Concha-Bermejillo et al., 1998). Benzylpenicillin appears rapidly in the blood after intramuscular injection, maximum concentrations being reached in 20 to 30 min. The minimum effective serum-penicillin concentration is about 0.02 μg/mL for sensitive organisms, but higher levels (0.03 to 0.06 μg/mL) are required in the treatment of sub-acute bacterial endocarditis or infections due to relatively less sensitive organisms. The half-life of benzylpenicillin when given intramuscularly is 30 min. However, very little passes into the cerebrospinal fluids except when the meninges are inflamed. Small amounts are excreted in the bile. It is rapidly excreted by the renal tubules, causing a steep decline in serum-penicillin concentrations; up to 60% of a single intramuscular dose may appear in the urine within 1 h of administration and 95% within 4 h. In patients with renal impairment, the serum half-life of penicillin may be prolonged, but normal doses of benzylpenicillin can be given except when there is severe impairment (Riviere and Papich, 2009).

**CONCLUSION**

Hipracilina can be toxic in kid goats at nearly 4-5 folds dose. It seems that this toxicity is related to penicillin compound.
REFERENCES


