

Clinical Report: Accidental Penicillin Toxicity in Fattening Pigs

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INTRODUCTION

Penicillin is usually considered by Mexican swine practitioners as a drug of low toxicity. But in some cases, this antibiotic has shown to produce clinical signs of shivering, vomiting, inappetence, pyrexia, vulvar inflammation and there has been abortion (Nurmio and Schulman, 1980; Marshall, 1980; Embrechts, 1982; Lynch, 1984). This communication deals with the clinical signs of toxicity after procaine-penicillin intramuscular injection in fattening pigs as well with the pathological changes collected at the PM examination of animals dead afterwards.

CLINICAL HISTORY

In a semi all-in all-out system, 250 pigs weighing 20 kg approximately were introduced in half disinfected fattening premises (the other half was occupied by a batch of pigs introduced a week before), each of them received a 50,000 IU kg⁻¹ of procaine penicillin (Chinese bulky commodity penicillin bottled at farm) by intramuscular injection. The animals were healthy and in a very good body condition. They were injected as a preventive measure against respiratory infections in fact that farm had already a diagnostic of chronic glasser disease and *Actinobacillus pleuropneumoniae*. The intention of the penicillin injection was to reduce the traditional number of casualties that usually occurred in the 2nd and 3rd week to the newcomers in those premises. About 2 h after penicillin injection, some pigs were vomiting in almost all pens some of them shivering, shaking and panting. The pens of non-injected animals remain without those clinical signs already described.

Four pigs died 3-4 h after penicillin injection, some others were panting and had scarce foam in the nostrils and mouth two more were found dead the next morning the remaining affected pigs recovered by these time.

POSTMORTEM EXAMINATION (PM)

In the six dead animals, the gross lesions were practically, the same those were ventral cyanosis in the neck, inner forearms, thorax, belly and inner thighs, congestion and intraseptal edema of the lungs white foam in trachea and bronchia, petechial and ecchymotic hemorrhages on the epicardium and endocardium. Amber fluid in thoracic cavity. Empty stomachs with severe congestion of the fundus gastric mucosa. To confirm whether the suspicious product was responsible of the clinical signs and PM lesions 3 pigs (from different and older healthy group of animals) were injected with the remaining penicillin of one the bottles used previously, all of them 2 h later were shivering and vomiting, one of them died 6 h later and showed the some gross lesions already described.

DISCUSSION

The PM findings were quite similar to the lesions reported by Desrosier *et al.* (1988) and Ernest (1991) in cases of procaine penicillin toxicity. The mechanism by which procaine penicillin can produce untoward effects in swine is not unanimously accepted (Reyns *et al.*, 2009).

However, the opinion of different researcher is the following: Nurmio and Schulman (1980) concluded these reactions to be likely caused by hypersensitivity to

penicillin. Marshall (1980) considered this hypothesis to be unjustified for several reasons. Botting (1997) suggests that this toxicity was not actually due to the penicillin itself but rather due to the impure nature of the compounds previously used for its elaboration. Embrechts (1982) reproduced signs similar to those observed in a field case by injecting pigs with either procaine penicillin or procaine alone. He suggested the toxic reaction might be influenced by the relative shelflife or the storage conditions of the suspension used. Following them, researchers believe that the low quality of the product was probably the cause of the problem since, the penicillin used was acquired as a cheap commodity and bottled and maintain in poor conditions (prolonged hot and humid weather for >6 months). Another possible explanation is the assumption that all animals absorb distribute and metabolize a given drug in the same manner which is not always true due to different homeorhesis grades caused by a given disease that produces unexpected physiological responses (Allen *et al.*, 1993).

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