Short Communication

DOI: https://doi.org/10.62418/ijvph.10.2.2024.93-94

Recreational Shooting and Gun Shot Wound (GSW) in Pet Dog Concerning Clinical Veterinary Public Health

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(*Received:* 27th August 2024 | Accepted: 21st November 2024)

Abstract

A gunshot wound (GSW) on the left side of the shoulder of a one-year-old mongrel pet dog was reported. Immediately within two hours, surgical management was done; the pellet was removed intact under general anesthesia and the dog recovered uneventfully. As, on an emergency basis, management of GSW was performed in this dog, so there was neither any chance of toxic lead poisoning nor environmental pollution concerning veterinary public health hazards. The use of lead-free pellets is highly recommended.

Keywords: Gunshot, Dog, Recreational shooting, Environmental hygiene

Public health veterinarians have an added role in protecting environmental health and hygiene originating from recreational shooting. This type of shooting is a portal for the lead entering the wildlife food chain. The use of lead pellets not only endangers the wild fauna but also causes environmental pollution by the hunters. Gunshot wounds (GSW) or ballistic traumas have been reported in various wild, domestic and pet animals (Pavletic and Trout, 2006; Mahesh et al., 2014). The severity of the wound depends on a few variables like mass of the pellet, velocity of the pellet at impact and location of the point of contact with the victim animal. Also, the management of Gun-shot wounds in animals can be problematic primarily due to variations in the firearm used and the exact nature of the wounds inflicted. Sometimes, pet dogs had been left outdoors unsupervised in the outskirts of the forest. A gunshot accident or shotgun pellet injury was observed in one pet dog immediately after the incident. Surgical management with clinical veterinary public health and environmental significance was reported and discussed.

A one-year-old female mongrel pet dog has been presented with a pellet injury showing pain and depression with an inability to bear weight on the left forelimb. Minimal bleeding with a tiny wound (an entry wound of a bullet) in the skin of the shoulder was noticed. Apparently, no behavioral changes or gastrointestinal or neurological signs were observed. No exit wound of a bullet was detected. The bullet was not felt with fingers from outside of the skin. X-ray of the injured part revealed a single intact bullet shattered the proximal part of the humerus just below the shoulder (Figure 1). It may be stated that in the present case, the pellet was shot by a low-energy gun, based upon X-ray, clinical observation and tissue damage. Also, toxic lead has no impact due to very brief exposure to lead pellets within the body. Then, it was decided to surgically remove the pellet.

The dog was restrained in left lateral recumbency and the left shoulder region was prepared for surgery. General anesthesia was induced and maintained with Thiopentone sodium @12 mg/kg premedicated with atropine sulfate @0.04 mg/kg and maintained in intubated condition. The wound was exposed by incising the skin and muscle. The pellet was removed by hemostatic forceps. The wound was flushed with Povidone Iodine from the entry site thoroughly. Muscle and skin were sutured as usual. Intravenous injection of Cefotaxim Sodium was given @ 30mg/kg daily for five days with Meloxicam given @ 0.5mg/kg (I/M) daily for three days. Antiseptic wound dressing was done regularly. The dog remained stable after surgery. On the 2nd day of surgery, the vital force of the dog came to normalcy and no complications were noticed. The skin suture was removed on the 7th postoperative day and the dog recovered uneventfully.

Ballistic injury can vary from simple minor penetrating skin wounds to major life-threatening soft and hard tissue concurrent complex damage with metabolic ramifications. Lead poisoning of wildlife from ammunition has long been recognized for one and half centuries. The retained bullets are encased by fibrotic scar tissue with poor vascularization in the soft tissue and bones, avoiding lead dissolution. Lead-based ammunition is a significant source of lead exposure in the human diet and it ingests wild and game birds (Berry et al., 2015). Recreational shooters often target dogs and wild animals, which may provide an important portal for the lead entering the wildlife food chain and may pose a risk to the environment as well as carnivores (Delahav and Spray, 2015). Lead is considered toxic to multiple physiological systems in mammalian and avian species and is potentially carcinogenic to man. The historical

legacy of gunshots remains available to wildlife, increasing over time where shooting with lead gunshots continues (Deborah et al., 2019). Lead-based bullets can fragment into many small pieces and tiny particles to be easily ingested by scavenging animals or incorporated into bush meat for human consumption. Cases of arthropathy and systemic lead intoxication have been observed when bullets were in close contact with fluidfilled spaces like synovial and cerebrospinal fluid. Sometimes, lead intoxication develops several years after a gunshot wound. Hunters should consider potential exposure risks from the consumption of lead fragments and make educated decisions to limit the chances of lead exposure. However, in the present case, surgical intervention for the successful extraction of lead pellets from soft muscle tissue was done immediately after the ballistic trauma without giving any chances of lead intoxication. Surgical removal of the pellet, management of the wound and administration of broad-spectrum antibiotics resulted in the early recovery of the dog without any complications. These corroborate the findings of Pavletic and Trout, 2006. Clinical Veterinary Public Health (CVPH) is totally a field-oriented clinical as well as applied subject, mainly based on the preventive aspects of population and environment (Das, 2017). CVPH sets a new benchmark for sustainable solutions and impact on animal health, public health and the environment (Das, 2019). Hence, the use of lead-free ammunition like steel or copper or copper alloy (90-95 percent copper and 5-10 percent zinc) bullet (Green bullet) for hunting is a scientific substitute for lead bullets and these green bullets are not prone to fragmenting or breaking apart. Ministry of Environment and Forests of all countries may consider this aspect for enactment and implementation for the protection of biotic as well as abiotic environment of this globe from a Veterinary Public Health point of view, wherever recreational shooting or hunting is allowed.

Surgical management of Gun gunshot wounds was performed successfully in pet dogs without giving any chance of lead intoxication. Lead-free ammunition (Green Bullet) must be recommended and used in recreational shootings impacting clinical veterinary public health shared by injured animals, humans and the environment.

Conflict of interest:

There was no conflict of interest among the authors.

Acknowledgement:

The authors duly acknowledge assistance and support of the Kolkata Municipal Corporation, Kolkata and Department of Veterinary Surgery, GBPUAT, Pantnagar, UK.



Figure 1: A pellet near the proximal humerus on lateral radiography of the injured dog

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Citation: Das U, Das AK. Recreational Shooting and Gun Shot Wound (GSW) in Pet Dog Concerning Clinical Veterinary Public Health. Indian Journal of Veterinary Public Health. 2024; 10(2): 93-94.

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