

## Multiple lead pellets in scalp

Madam, In the case of gunshot wounds in which shotguns are fired at close range, a large number of lead pellets may be retained in different parts of the body.<sup>1</sup> The impact of retained lead pellets depends not only on the number and size of the pellets but also on their location in the body.<sup>2</sup> Solubilization of lead pellets or fragments lodged particularly within or close to joints or body cavity (body fluids capable of solubilizing lead) may increase after a considerable latency time.<sup>2,3</sup> When pellets are in superficial location and multiple in number what should we do is a difficult question to answer as in the present case. This 70 years man was hit at close range by lead pellets from a shotgun in personnel rivalry. He presented 6 days after injury. At the time of incident he had transient loss of consciousness. There were no neurological deficits. His general and systemic examination was normal. Approximately 75 lead pellets were identified on X-ray in the bifrontal scalp region (Figure). All pellets were in superficial layer of the scalp. Patient was managed conservatively. No chelation therapy was given. The wounds healed uneventfully. The usual route of lead exposure is through ingestion, but lead toxicity secondary to

retained bullet fragments has been well documented in the adult literature.<sup>4</sup> If the number of lead pellets is large enough, dissolved lead from the pellets may cause adverse health effects as time passes.<sup>5</sup> Symptoms of systemic lead poisoning after shooting incidents may appear after a latency period that varies from a couple of months BPb ( $\mu\text{g/dL}$ ) to several decades.<sup>2,5</sup> The potential for lead toxicity as a complication of a lead missile injury appears to be related to (1) the surface area of lead exposed for dissolution, (2) the location of the lead projectile, and (3) the length of time during which body tissues are exposed to absorbable lead.<sup>1-5</sup> The diagnosis of lead toxicity is often difficult and delayed secondary to vague and transient symptoms.<sup>4</sup> Symptomatic lead toxicity includes features of abdominal colic and haemolytic anaemia. In these cases other causes of abdominal pain and weakness-such as diabetes mellitus, alcohol abuse, pancreatitis, and substance abuse should be ruled out.<sup>2</sup> Appropriate planning of imaging and the surgical approach depends on two perpendicular projections of the injured area are essential.<sup>2</sup> The primary management of patients with continued lead exposure is to remove the source of exposure.<sup>4</sup> Interventions include

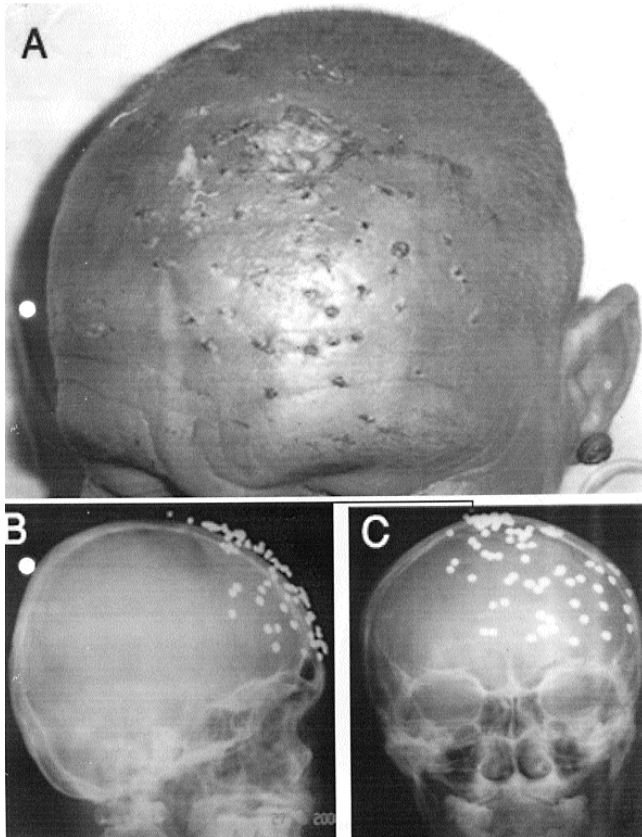


Figure: A. Clinical photograph showing multiple pellets entry wound, B. X-ray skull lateral view showing multiple pellets in scalp and C. X-ray skull AP view showing multiple pellets in scalp.

treatment with the newer oral chelating agent, Succimer (2, 3-dimercaptosuccinic acid), and subsequent surgery.<sup>4</sup> In some cases of retained bullet fragments, initiation of chelation

therapy before surgical removal may be essential in preventing systemic toxicity.<sup>3,4</sup> As in present case when removal of the bullet fragments is impractical, the potential risks of long-term chelation therapy must be weighed against the risks of lead toxicity.<sup>3</sup> Patients with retained lead-based bullet fragments should be educated about the rare potential for plumbism due to partial bullet fragment resorption and that long-term observation for this disorder is recommended.<sup>1-5</sup> In the present case patient had an extensive involvement of the scalp with multiple pellets and he is a potential candidate for lead toxicity. There is definite evidence that pellets located near to the joint or body cavity can cause lead toxicity. If the pellets are in a superficial location and in elderly people then they are not an immediate threat to life. The pellets in the present case, lead to a question, how do we manage and what will be the natural course of the retained pellets?

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## References

1. Farrell SE, Vandevander P, Schoffstall JM, Lee DC. Blood lead levels in emergency department patients with retained lead bullets and shrapnel. *Acad Emerg Med* 1999; 6:208-12.
2. Meggs WJ, Gerr F, Aly MH, Kierena T, Roberts DL, Shih R, et al. The treatment of lead poisoning from gunshot wounds with succimer (DMSA). *J Toxicol Clin Toxicol* 1994; 32:377-85.
3. Coon T, Miller M, Shirazi F, Sullivan J. Lead toxicity in a 14-year-old female with retained bullet fragments. *Pediatrics*. 2006; 117:227-30.
4. Magos L. Lead poisoning from retained lead projectiles. A critical review of case reports. *Hum Exp Toxicol* 1994; 13:735-42.
5. Akhtar AJ, Funnys AS, Akanno J. Gunshot-induced plumbism in an adult male. *J Natl Med Assoc* 2003; 95:986-90.