

Penetrating Cardiac Trauma with Retained Intra - Myocardial Pellets - A Case Report

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ABSTRACT

Introduction: Penetrating ballistic cardiac injury is usually fatal before victim gets any medical help. Retained intracardiac missile is a very rare entity and so far a very few cases have been reported in the literature.

Case report: We describe a young patient who presented with multiple life threatening pellet injuries involving chest, abdomen, and limbs. Patient had CT and echocardiography documented retained pellets in the heart with pericardial effusion. Patient was managed successfully using conservative approach without any surgical intervention.

Conclusion: this case highlights the importance of careful monitoring and conservative approach in such critically ill patients for a better outcome.

Keywords: Intracardiac Pellets, Penetrating Cardiac Injury, Pericardial Effusion

INTRODUCTION

With the steady increase in both military and civilian conflict world over there has been increase in the patients who report with ballistic injuries especially in developing countries. These injuries present a challenge to health care providers both medically and economically. Cardiac injury due to pellets is relatively rare and there is lack of consensus on the standard treatment due to rarity of these injuries.

CASE REPORT

A 16 years old young boy was received in Emergency department with history of pellet gunshot injury to chest, abdomen and limbs. The pellets had been fired from a pellet gun from front at a close distance of 10 to 15 meters. Patient was hemodynamically stable. Initial evaluation showed pellets in chest, abdomen and limbs (Figure 1, 2). There was evidence of bilateral Hemothorax.

Evaluation

Survey Non-Contrast Computed Tomography (CT) Scan of chest showed two hyperdense lesions in heart, one in right atrial area and other in left ventricular area, other finding include similar lesion in anterior chest wall and posterior part of right lower lobe of lung with bilateral Hemothorax (Figure 3).

For further evaluation of cardiac lesions patient was taken for echocardiography which revealed a pellet lodged in the base of posteromedial papillary muscle of left ventricle (figure 4) and other pellet lodged at the right atrioventricular junction of heart in the atrioventricular groove (figure 5). Echocardiography also revealed presence of mild circumferential pericardial effusion without evidence of

tamponade.

Management

Patient was managed with bilateral intercostal tube drainage for bilateral Hemothorax and supportive treatment was continued. Retained intramyocardial pellets were managed conservatively. Patient was monitored for displacement of intramyocardial pellets, ventricular function, valvular function and pericardial effusion by serial echocardiography during course of hospital stay over a period of two weeks. Investigations did not show any change in pellet location, ventricular function, valvular function or worsening of pericardial effusion and patient was discharged in stable condition.

DISCUSSION

With more than 50% dying outside of the hospital and another quarter dead on arrival, Penetrating cardiac injury is mostly fatal. It is a rare condition and there is a lack of appropriate and sufficient data on penetrating and retained intracardiac missiles. In literature there are just over 322 case reports of penetrating injury with retained foreign body in cardio-vascular system with majority of cases reporting involvement of peripheral vasculature from 1940 to 2009.¹ The location of injury to heart is usually determined by the anatomical position of the heart.² Right and left ventricle are involved about 40% of cases, 24% in right ventricle and least 3% to the left atrium. Nearly 5% of the injuries are classified complex as the result in creation of shunts, disrupt valves and papillary muscles and lacerate coronary arteries.³ The diagnosis of retained intracardiac foreign bodies can be made by history, conventional radiography, CT scan and echocardiography. A simple chest x ray gives the information regarding the presence of metallic foreign body but lacks the precision in its localization. CT scan can be used to more precisely locate the foreign body in heart and great vessels in a hemodynamically stable patient.⁴ 2-dimensional echocardiography is the most useful of these investigation as

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Figure-1: Pellets to Chest and Abdomen **Figure-2:** X-Ray Showing Pellets



Figure-5: Echo Showing Pellet in the AV Groove of the Heart

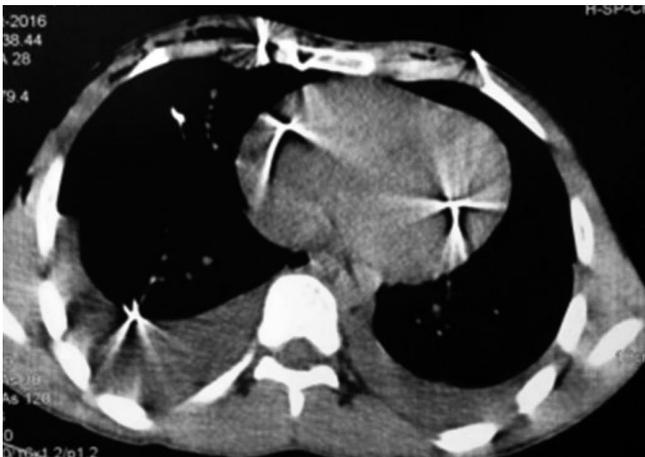


Figure-3: CT Showing Pellets in Heart and Lung



Figure-4: Echo Showing a Pellet in the Posterio-Medial Papillary Muscle

it is the most accurate method of localization of the foreign body and helps in directing the further management.⁵ The clinical manifestation in the survivors may be heart failure, tamponade, arrhythmias, pericarditis or embolic phenomena depending upon the number and location of the projectiles.^{6,7} There are no standard treatment protocols for these kind of cardiac injuries due to their low incidence.^{8,9} These manifestations usually need an urgent surgical

intervention. Often the treatment has to be individualized.^{10,11} Short gun pellets in general are notorious for migration on attempted surgical removal and demand a precise localization before surgical intervention.^{12,13,14} In addition the left sided intra-cavitary foreign body needs removal for the fear of systemic embolization.¹⁵

CONCLUSION

The successful management of our patient depicts the usefulness of conservative management in patients of retained intramyocardial missiles. It also emphasizes the importance of echocardiography in localization of the foreign body and monitoring of any potential complications and thus avoiding the morbidity and mortality associated with a cardiac surgery.

REFERENCES

1. Lundy JB, Johnson EK, Seery JM, Pham T, Frizzi JD, Chasen AB. Conservative management of retained cardiac missiles: case report and literature review. *J Surg* 2009;66: 228–35.
2. Duke JC. Penetrating cardiac trauma. *Itaces Trauma Care* Fall/ Winter. 2001;11:74–6.
3. Nabajeet Baruah & Mrinmoy Talukdar. Cardiac air rifle pellet injury: a case report *Indian J Thorac Cardiovasc Surg* 2011;27:45–47.
4. Jiang CL, Gu TX, Wang C. Surgical treatment of posttraumatic foreign bodies in the heart or great vessels. *Chin Med J*. 2006;119:2018–20.
5. Hassett A, Moran J, Sabiston DC, Kisslo J. Utility of echocardiography in the management of patients with penetrating missile wounds of the heart. *J Am Coll Cardiol* 1986;7:1151–6.
6. Khanna A, Drugas GT. Air gun pellet embolization to the right heart: case report and review of the literature. *J Trauma*. 2003;54:1239- 41.
7. Hopkins HR, Pecirep DP. Bullet embolization to a coronary artery. *Ann Thorac Surg*. 1993;56:370-2.
8. Alejandro KV, Acosta JA, Rodriguez PA. Air gun pellet cardiac injuries: case report and review of the literature. *J Trauma*. 2003;54:1242-4.
9. Hudson AJ, Wyatt JP. Cardiac air gun pellet injury. *Emerg Med J*. 2001;18:519.
10. Wall MJ Jr, Mattox KL, Chen CD, Baldwin JC. Acute

- management of complex cardiac injuries. *J Trauma*. 1997;42:905-12.
11. Alfonso Cañas, Luis L. Cardiac Shotgun Pellet in the Interventricular Septum. *Rev Esp Cardiol*. 2007;60:992-7
 12. Lubianca Neto JF, Mauri M, Machado JR, et al. Air gun dart injury in paranasal sinuses left alone [J]. *Int J Pediatr Otorhinolaryngol* 2000;52:173-6.
 13. Mahajan M, Shah N. Accidental lodgement of an air gun pellet in the maxillary sinus of a 6-year old girl: a case report [J]. *Dent Traumatol* 2004;20:178-80.
 14. D.N Kiran.Shina Mittal. Gunshot (Pellets) injury to the maxillofacial complex: a case report: *Chinese Journal of Traumatology* 2014;17:170-172.
 15. Symbas PN, Picone AL, Hatcher CR, Vlais-Hale SE. Cardiac missiles: a review of the literature and personal experience. *Ann Surg* 1990;211:639-47.

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