CIRUGIA Y CIRUJANOS

CASO CLÍNICO

Embolización de cuerpo extraño por la raíz aórtica por lesión por arma de fuego: caso clínico de una paciente asintomática de diez años

Foreign body embolization by the aortic root due to a fire gun injury: A case report of a 10-year-old asymptomatic patient

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Abstract

Foreign body embolies that origin arterial system have mostly seen symptomatic and that's why they require emergency surgery. However, asymptomatic cases are followed conservatively, they can cause vascular-related end-organ pathologies as time passes. Foreign body migration from the ascending aorta to the end-organ artery is a very rare in literature after a fire gun injury. In symptomatic cases, emergency surgery should be planned immediately. In asymptomatic cases, the risks and benefits should first be considered before any surgical approach.

Keywords: *Fire gun injury. Foreign body embolization. Aortic root.*

Resumen

Las embolias de cuerpo extraño que tienen origen en el sistema arterial se han presentado en su mayoría sintomáticas y por eso requieren cirugía de emergencia. Sin embargo, los casos asintomáticos se siguen de manera conservadora, pueden causar patologías vasculares relacionadas con los órganos diana a medida que pasa el tiempo. La migración de cuerpos extraños desde la aorta ascendente hasta la arteria del órgano blanco es muy rara en la literatura después de una lesión por arma de fuego. Casos sintomáticos, la cirugía de emergencia debe planificarse de inmediato. En casos asintomáticos, primero se deben considerar los riesgos y beneficios antes de cualquier abordaje quirúrgico.

Palabras clave: *Lesión por arma de fuego. Embolización por cuerpo extraño. Raíz aórtica.*

Introduction

Foreign bodies in the heart or major arteries can be seen due to fire gun injuries. Increased use of illegal drugs in recent years can cause migrating needles[1,2]. Furthermore, the catheters used for intravascular treatment can sometimes break off and they can go to distal arteries or can migrate to the heart if they in veins[3,4].

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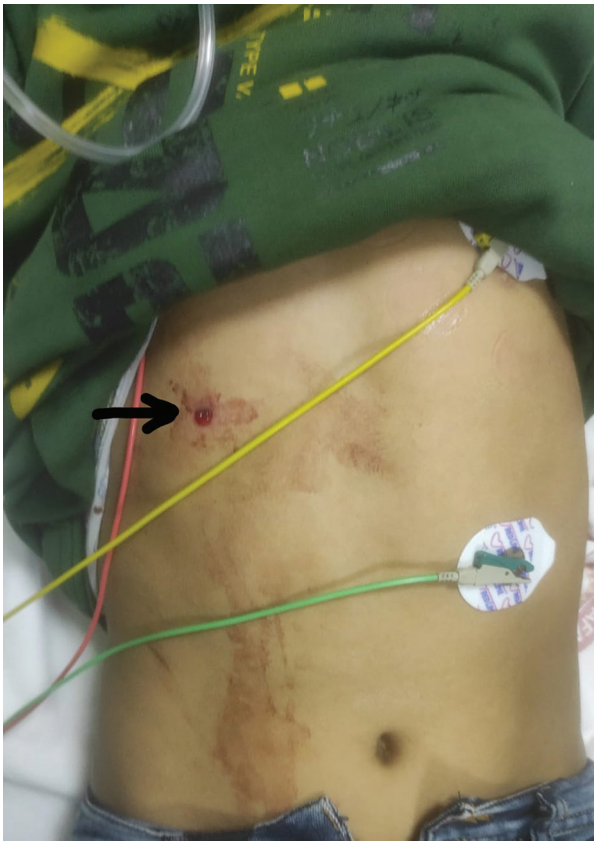

Figure 1. *Entrance wound of bullet.*

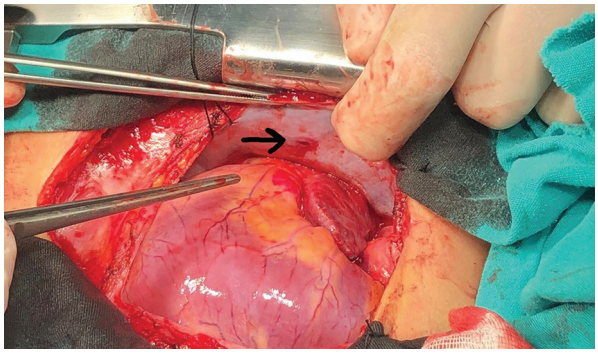

Figure 2. *Bullet wound on pleura.*

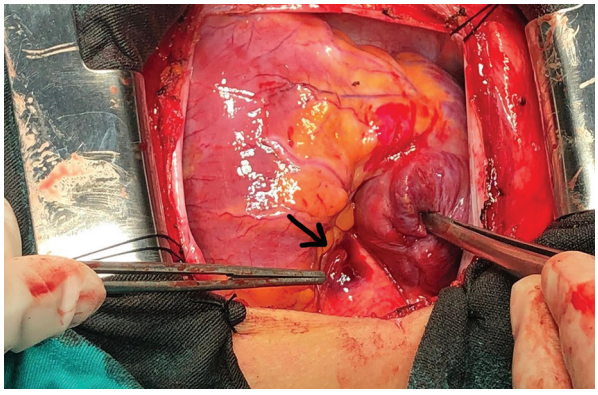

Figure 3. *Adventitial hematoma on aortic root.*

The sources of intravascular foreign bodies are different in every age group. The most common cause in children is iatrogenic, while in adults, it is due to illegal drug use or war injuries[5].

Foreign body embolies that origin arterial system have mostly seen symptomatic and that's why they require emergency surgery. However, asymptomatic cases are followed conservatively, they can cause vascular related end-organ pathologies as time passes[6].

In this paper, we present the case of a 10-year-old male patient who got injured by a fire gun and underwent emergency surgery. The bullet was not founded in the intrathoracic region, the bullet had migrated into the segmental artery of the liver.

Case report

A 10-year-old male patient applied to the emergency service. The first physical examination shown the entrance of the bullet was just below the right nipple, however, there were no evidence of an exit of the bullet (Fig. 1). His heart rate was 138 beats/min, blood pressure was 65/38 mmHg. Echocardiography was performed in the emergency room.

The right ventricular dilatation, dilatation of the inferior vena cava, and signs of cardiac tamponade supported by more than 2.8 cm of fluid at the thinnest point around the heart were observed. He underwent emergency operation immediately. After the pericardium was opened, his vital functions immediately returned to normal. However, no major bleeding was found. No signs or traces of the bullet were found. During intraoperative exploration, a bullet entrance was found on the right pleural area (Fig. 2).

When explored in detail, adventitial hematoma was detected on the right anteromedial surface of the aortic root (Fig. 3). No additional bleeding was detected despite physical manipulations and washing with warm water. After the procedure, chest and abdomen computed tomography were applied in addition to the chest X-ray. A foreign body forming a metallic structure was detected in the segmental branch of the hepatic artery (Fig. 4). With the recommendations of the pediatric surgery department, no additional surgeries should be

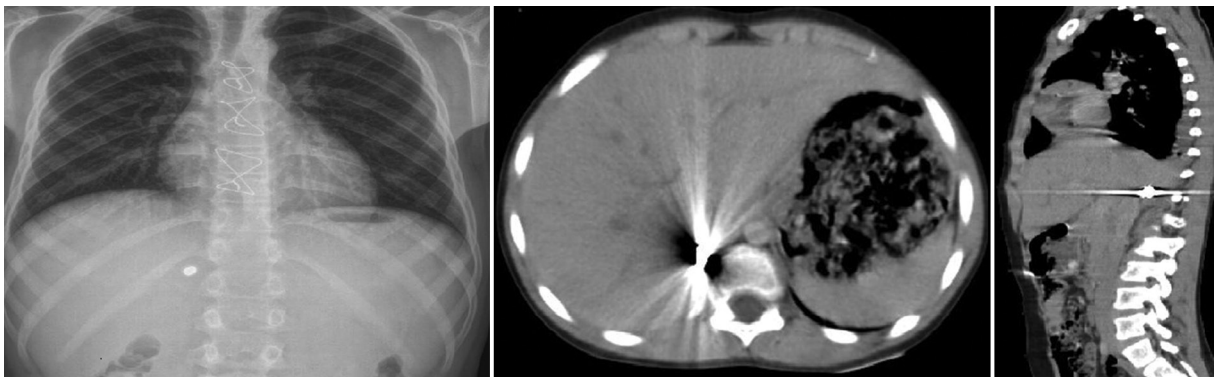

Figure 4. *Chest X-Ray and CT images of the bullet that migrated to hepatic system.*

planned, and the patient was decided to be followed. After the 5th day postoperatively, no pathologies were seen in the patient's liver functions tests, so the patient got discharged without any problem.

Discussion

Foreign body embolization was first introduced in literature in 1834, after that, only a few cases have been added to literature[7]. If the foreign body is not found at the site of surgery, foreign body embolization should always be kept in mind[8].

Gunshot wounds manifesting in the intravascular space affect the arterial system 4/1 more frequently. When a foreign body enters the arterial lumen, the probability of causing ischemic damage is 80%[8,9].

In symptomatic cases and if the diameter of the foreign body is more than 5 mm, emergency surgery should be planned to prevent ischemic event[2]. The treatment of asymptomatic foreign body penetrations is still not very clear. Foreign body excision or conservative treatment options should be considered according to the risk of surgery and complications[10].

Conclusion

Foreign body migration from the ascending aorta to the end-organ artery is a very rare in literature after a fire gun injury. Symptomatic cases, emergency surgery should be planned immediately. In asymptomatic cases, the risks and benefits should first be considered before any surgical approach.

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Conflicts of interest

The authors declare no conflicts of interest.

Ethical disclosures

Protection of human and animal subjects. The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

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