

Conservative management in iatrogenic splenic trauma after chest tube insertion

Manejo conservador de un traumatismo esplénico iatrogénico tras la inserción de un tubo de tórax

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Abstract

Inserting a chest tube is a therapeutic tool of great value not without complications. Our objective is to highlight a new treatment option using interventional radiological techniques that avoid the risks of surgery in selected patients. We present the case of a multi-pathological patient with a diagnosis of the left pulmonary empyema who accidentally inserted a chest tube into the splenic superior pole. The comorbidities of the patient and the presence of hemodynamic stability advocated conservative treatment through supraselective splenic catheterization and the introduction of surgical glue in the withdrawal of the tube.

Keywords: Arteriography. Splenic trauma. Chest tube.

Resumen

Insertar un tubo torácico es una maniobra terapéutica de gran valor, pero no exenta de complicaciones. Nuestro objetivo es poner de manifiesto una nueva opción de tratamiento mediante técnicas radiológicas intervencionistas que eviten los riesgos de una cirugía en pacientes seleccionados. Presentamos el caso de un paciente pluripatológico con diagnóstico de empiema pulmonar izquierdo al que de manera accidental se le insertó un tubo torácico en el polo superior esplénico. La comorbilidad del paciente y la presencia de estabilidad hemodinámica abogaron por un tratamiento conservador mediante cateterización esplénica supraselectiva e introducción de cola quirúrgica en la retirada del tubo.

Palabras clave: Arteriografía. Traumatismo esplénico. Tubo de tórax.

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Introduction

Insertion of a chest tube is a common procedure in usual clinical practice that is not without complications¹, including those caused by insertion of the tube into the abdominal cavity. There is a growing tendency toward conservative treatment if injury characteristics and patient conditions allow, with surgical trauma thus being avoided.

Clinical case

We present the case of an 84-year-old male patient with personal history of high blood pressure, kidney failure due to nephroangiosclerosis and duodenal ulcer who had been diagnosed 3 months earlier with Stage IV sigmoid colon adenocarcinoma with a left lung metastatic mass. After the case was presented to a multidisciplinary committee, implanting a stent for the stenosing tumor and starting oral chemotherapy with capecitabine was decided. The patient attended the emergency department with a history of several days of fever and, after radiological evaluation, he was diagnosed with left pulmonary empyema. Thoracocentesis was performed with purulent material discharge, and placement of a chest tube was, therefore, indicated. In the absence of output from the tube, a thoracoabdominal computed tomography scan was performed, which showed chest drain malposition, with the tube piercing the upper pole of the spleen and its distal end reaching the splenic hilum, with no signs of intrasplenic or intra-abdominal bleeding (Fig. 1).

Since the patient was hemodynamically stable, without abdominal pain and without hemoglobin decrease, attempting conservative management was decided, for which a splenic arteriography was carried out, in which an intrasplenic pseudoaneurysm was observed on the path of the chest tube. Subsequently, the branch that it depended on was supraseductively catheterized and segmentally embolized with Onyx. The catheter was left in place in this branch and the chest tube was catheterized with a 4-F catheter that was advanced up to its tip, with Glubran® diluted 2/1 with lipiodol being administered at its withdrawal. Subsequently, a new angiographic control was carried out, in which the pseudoaneurysm or active bleeding was no longer observed. Two chest tubes were placed again for empyema drainage. Subsequent evolution was satisfactory, with the patient remaining asymptomatic from the abdominal point of view, hemodynamically stable, and without development of anemia. On the 5th day, a control

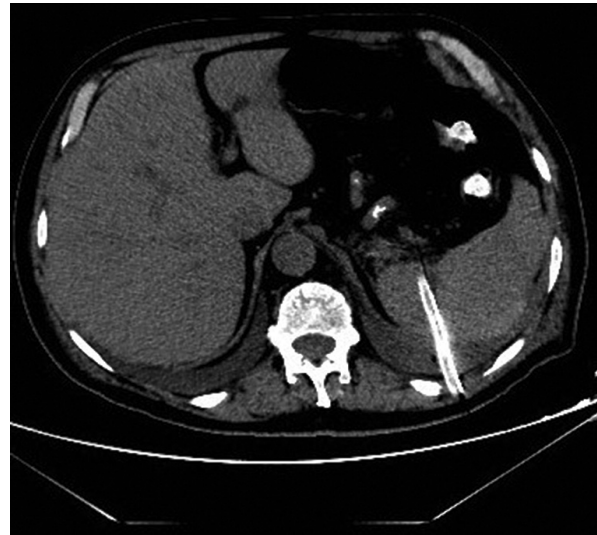


Figure 1. Spleen-inserted chest tube.



Figure 2. Post-embolization control. Segmental splenic infarction.

thoracoabdominal computed tomography (Fig. 2) showed changes secondary to spleen middle third segmental embolization and a small segmental infarction adjacent to the embolization area. After completing antibiotic treatment for his pneumonic process, the patient was discharged for follow-up on an outpatient basis.

Discussion

The risk of sepsis after splenectomy and potential complications of laparotomy in complex patients make for conservative management of splenic trauma to be increasingly advocated. Current trend is toward an increase in interventions on the splenic artery to treat

different clinical conditions², with splenic trauma being one of the most common. Indications for embolization include contrast leakage, pseudoaneurysm, Grade IV and V lesions, and hemoglobin continuous drop^{3,4}; patient hemodynamic stability is an essential condition. However, prior selective embolization and hemostatic material injection to the path during chest tube removal is an unusual technique, since in a literature review, we have only found one case that required angioembolization some days after chest drainage removal, with no knowledge of its previous malposition in the spleen⁵, and another case of conservative management with intra-splenic chest tube being left for 2 weeks and subsequently removed after the formation of a fistulous path around the tube⁶.

After splenic embolization, especially after distal embolization, complications may occur⁷, both major (14%; splenic infarction, splenic abscess, contrast-induced kidney failure, and symptomatic splenic cyst) and minor (34%; left pleural effusion, coils malposition or migration, fever, and femoral pseudoaneurysm). Most patients can be conservatively managed⁸. In general, splenic infarcts are usually asymptomatic and do not require treatment, and abscesses may sometimes require radio-guided puncture-drainage. The most common complication after embolization is usually rebleeding, but most patients are candidates for a new angiography and embolization with good results. Evidence suggests that immune function is reasonably well preserved after non-surgical treatment with or without angioembolization, which is why systematic vaccination is not recommended in these patients.

Conclusions

Proximity of the spleen to the left hemidiaphragm makes for it to be susceptible to be injured when a chest tube is inserted, especially if the “safety triangle” is not respected⁹: latissimus dorsi muscle anterior border, pectoralis major muscle lateral border, and horizontal line at the level of the nipple; sometimes, using ultrasound is necessary⁶ for chest drainage correct insertion. If despite preventive measures the spleen is injured, in case of hemodynamic stability, and depending on the situation and patient characteristics, conservative management may be considered in order for future post-splenectomy sepsis or other possible complications of excisional surgery to be prevented. Arteriography with supraselective embolization and filling of the path with synthetic surgical glue at tube removal is a feasible technique that can be used for this purpose.

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Conflicts of interest

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Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this research.

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 informed consent from the patients and/or subjects referred to in the article. This document is in the possession of the corresponding author.

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