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Case report of a spontaneous splenic rupture in a patient with chronic lymphocytic leukaemia treated by arterial splenic embolization

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ABSTRACT

INTRODUCTION AND IMPORTANCE: Spontaneous splenic rupture (SSR) is a rare phenomenon where the spleen ruptures without associated trauma. SSR can lead to an intra-abdominal haemorrhage and an acute abdomen that can be life threatening.

CASE PRESENTATION: In this article, we present the case of an 81-year-old woman with chronic lymphocytic leukaemia who presented to the emergency department with severe abdominal pain.

CLINICAL DISCUSSION: In order to stabilize the patient, while awaiting elective surgery, we managed the rupture with splenic embolization and we reviewed the literature related to the treatments of SSR especially, by arterial splenic embolization.

CONCLUSION: Splenic embolization is a safe treatment option, that allows a rapid stabilization and has the advantage of both, splenectomy and conservative treatment.

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1. Introduction

Spontaneous splenic rupture (SSR) is a rare phenomenon where the spleen ruptures without associated trauma.

Most common aetiologies of SSR are: haematological diseases (30,3%), inflammatory diseases (20 %), infectious diseases (27,3%), drugs (9,2%), mechanical disorders (6,8%) and sometimes no cause is found (6,4%) [1].

Giagounidis et al. published a paper analysing 136 cases of SSR due to haematological diseases. Chronic lymphocytic leukaemia (CLL) was described in 5,8%, with only 8 cases of SSR [2].

Spontaneous splenic rupture is very rare in CLL probably because it usually progress slowly [2].

It can cause an acute abdomen and an intra-abdominal haemorrhage. It is a rare abdominal emergency that requires both immediate diagnosis and early treatment to ensure patient survival [3].

Actually the treatment of SSR is either surgical or conservative. Only few cases of radiological intervention are published in the literature [4].

That's why, in this article, we present our experience of a rare case of SSR in a patient with chronic lymphocytic leukaemia managed by emergency embolization and elective surgery.

2. Case report

A 81-year-old female patient who presented to the emergency room on for acute abdominal pain.

The patient's history included: partial thyroidectomy for thyroid goiter, chronic lymphocytic leukaemia with splenomegaly, several episodes of zona, diverticulitis, bladder and rectal prolapse, hypertension, hysterectomy for uterine fibroma and intestinal obstruction on adhesions.

On admission to the emergency room, the patient described severe abdominal pain that had appeared for a few hours which was associated with nausea without vomiting, pyrexia and constipation during the last 2 days. There was no sign of trauma or fall.

On clinical examination, tachycardia was detected (116 bpm), blood pressure was normal (120-76 mm Hg) as were saturation (97 %) and temperature (36.5 °C).

The abdominal examination showed diffuse pain on palpation of the entire abdomen and splenomegaly.

At the biology performed in emergency the patient had a haemoglobin at 11.7 g / dl and 109000/mm³ platelets.

The abdominal scanner demonstrated hemoperitoneum associated with multiple splenic lacerations predominant at the level of the upper pole of a significant splenomegaly without extravasation of contrast product (Image 1–3).

Seen those results because the patient was becoming unstable and his blood pressure was falling, we decided to perform an urgent arterial embolization.

Abbreviations: SSR, spontaneous splenic rupture; CLL, chronic lymphocytic leukaemia; ASE, arterial splenic embolization.

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Image 1. CT abdominal image of the splenic rupture1.



Image 2. CT abdominal image of the splenic rupture2.

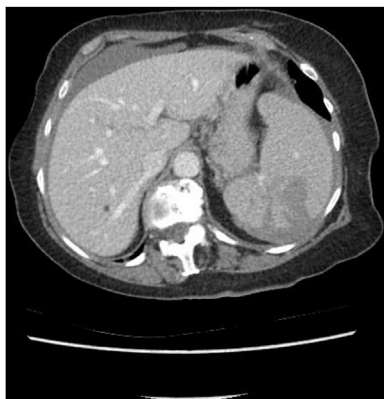


Image 3. CT abdominal image of the splenic rupture3.

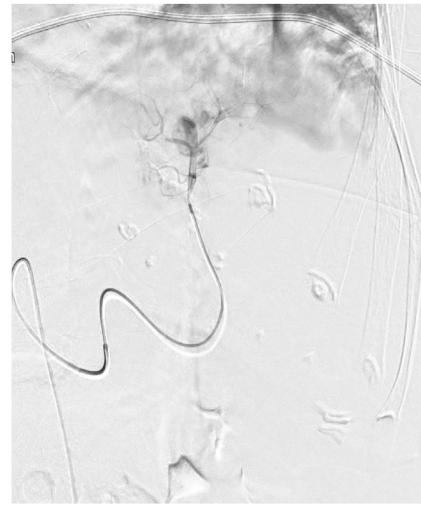


Image 4. Image of the embolization procedure1.



Image 5. Image of the embolization procedure2.

On the angiography an active arterial bleeding at the upper pole of the spleen was detected. The embolization was performed using coils and Gelfoam with a good angiographic result of the procedure (Image 4–6).

After the patient was transferred to the intensive care unit, her parameters remained stable. However, it was necessary to transfuse her platelets because of her thrombocytopenia.

Considering the risks of recurrent bleeding, tumor infiltration of the spleen, and persistent abdominal pain, a safer elective splenectomy was scheduled two days later.

A digestive surgeon performed splenectomy by laparotomy with drainage of 900cc of old blood; numerous pathological nodes along the splenic artery were present. The surgery went well and the patient was transferred in the intensive care for further surveillance.

The anapathology revealed a 250 g spleen measuring 16 × 12 × 8 cm with 2 tears measuring 11 and 8 cm long under which intraparenchymal hematomas were visible. The splenic parenchyma as well as the hilar ganglia showed diffuse infiltration by chronic lymphoid leukaemia.

The post-operative follow-up went without complications and the patient was discharged at the tenth post-operative day. At 12



Image 6. Image of the embolization procedure3.

months follow up, she was in a good clinical state, without any complication.

3. Discussion

Spontaneous splenic rupture is an atraumatic event that represents a rare and life-threatening acute complication in which the spleen is damaged producing internal haemorrhage in the abdominal cavity [3].

Considering the diagnostic of SSR, abdominal ultrasound can be made easily and fast at the emergency room but has a sensitivity of only 70 % [8].

The gold standard imaging is the contrast enhanced abdominal CT scan. It gives us information about the presence of intraperitoneal bleeding, the amount of splenic haemorrhage and can sometimes give information on the aetiology of the SSR [8].

The treatment of SSR is based on 3 approaches: conservative (clinical monitoring), surgical (splenectomy) and recently arterial splenic embolization (ASE) [1,3].

The choice of the treatment depends of different variables: the aetiology of the SSR, the hemodynamic stability, the amount of blood product used, the operability of the patient, the grades of splenic injury as well as the amount of hemoperitoneum [1].

The conservative approach can be tried when the patient is hemodynamically stable as well as his haemoglobin level, when SSR is due to a non-malignant aetiology, and when an appropriate monitoring is possible. The advantage of a conservative treatment is the preservation of the spleen for his immunological function [9,10].

The advantages of splenectomy are various: it increases patient survival up to 60 % compared to conservative treatment which shows mortality of up to 93 % according to some articles, it allows avoiding new episodes of recurrent bleeding and, the histological examination of the spleen provides us more information on the aetiology when it is unknown [1,3,9].

The third therapeutic option, which is more and more described in recent literature, is the arterial splenic embolization (ASE).

We choose to treat our patient with emergency embolization, not only for speed of execution and patient stabilization, but also to allow splenectomy to be performed under safer conditions for a fragile patient.

Splenic embolization offers various advantages, including those of splenectomy and conservative treatment. It allows to reduce the risk of delayed splenic rupture as well as post-splenectomy infection by maintaining functional splenic tissue.

Moreover, splenic embolization helps stabilize the patient and prevents heavy bleeding during splenectomy [9].

Nowadays, with the improvement of the technique, there are fewer complications after ESA. The most common are fever and abdominal pain that occurs immediately after embolization [9]. This encourages us to use more and more this new therapeutic option.

4. Conclusion

Spontaneous splenic rupture is a rare aetiology of acute abdomen, but has to be considered in patients with haematological malignancies. Given that it requires an immediate diagnosis and early treatment to improve survival rate [3].

Splenic arterial embolization is a safe treatment; it allows a rapid stabilization of the patient as well as the realization of a safer and elective splenectomy if necessary.

This new therapeutic option in the care of SSR can offer both the benefits of splenectomy and conservative treatment, it must therefore be considered as an interesting therapeutic choice [9].

Declaration of Competing Interest

The authors report no declarations of interest.

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Ethical approval

This case report is exempt from ethnical approval.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Héloïse Tessely: Research of literature and writing.

Stephane Journe: Surgeon who performed the splenectomy.

Katz Raphael: Radiologist who performed the arterial embolization.

Jean Lemaitre: Surgeon who performed the splenectomy and supervision and correction of the article.

Registration of research studies

Not applicable.

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