

## CASE REPORT / ПРИКАЗ БОЛЕСНИКА

# Spontaneous splenic rupture in infectious mononucleosis

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The aim of this paper was to present a case with spontaneous splenic rupture after IM.

**Case outline** A 22-year-old female patient was feeling better one month after she was treated for infectious mononucleosis, and started training volleyball. Two weeks after starting the training, she felt severe abdominal pain. The diagnosis of rupture was confirmed with computer tomography. Splenectomy was successfully performed. The postoperative course was uneventful and the patient recovered with no need for blood transfusion.**Conclusion** Timely diagnosis and setting indications for surgical treatment are crucial in healing. Patients should wait to start with sport activities at least two months if the size of the spleen is within normal range.**Keywords:** infectious mononucleosis, complications; rupture, spontaneous; splenic rupture, etiology, surgery; splenectomy**INTRODUCTION**

Infectious mononucleosis is a common viral illness caused by an infection with the Epstein–Barr virus and it is manifested with fever, sore throat, fatigue, and lymphadenopathy [1]. Complications are rare including splenic rupture with an incidence between 0.06–0.5% [2]. Splenic rupture is considered as the most dangerous complication that may lead to fatal outcome [1]. Symptoms of splenic rupture include abdominal pain, syncope, and rapid drop in blood pressure, while the diagnosis is mostly established with ultrasonography or computer tomography of the abdomen [3]. Recommended treatment for splenic rupture is splenectomy in order to avoid sudden death [4].

**CASE REPORT**

A 22-year-old female patient previously diagnosed with infectious mononucleosis presented herself to the Emergency Department of the Clinical Center of Serbia, as an emergency case due to severe abdominal pain. Six weeks previously she had gone to the hospital, where she had been diagnosed with infectious mononucleosis. The diagnosis was reached based on medical history, clinical examination, and elevated levels of immunoglobulin M and immunoglobulin G antibodies against Epstein–Barr virus. Abdominal ultrasound

revealed enlarged liver and spleen; axial diameter of the spleen was 14.2 cm. After a month of treatment, the patient was feeling better and started to train volleyball. Two weeks after she started to train, the patient felt severe abdominal pain and presented herself to the Emergency Department of the Clinical Center of Serbia. The pain onset was sudden, occurred while the patient was playing volleyball, and was accompanied by malaise, dizziness, and general weakness. The patient's skin and visible mucous membranes were pale; the skin was covered with cold sweat. The patient was alert and oriented but hemodynamically unstable with a heart rate of 122 beats per minute and low blood pressure (90/50 mmHg). Blood test results showed a low hemoglobin level (93 g/L), leukocytosis ( $17 \times 10^9/L$ ) and a low level of red blood cells ( $3.28 \times 10^{12}/L$ ). On palpation, the patient's abdomen was firm, very sensitive, and painful, especially in the left upper quadrant. The diagnosis was confirmed with computer tomography (CT) scan of the abdomen. The CT scan showed spleen enlargement and fluid ( $14 \times 7$  cm in size) (Figure 1). The presence of free fluid was noticed in the left paracolic gutter. CT morphology of the liver, kidneys, and pancreas was normal. As intensive reanimation therapy did not help, as the heart rate was still accelerated in spite of the reanimation therapy, it was decided that the patient should undergo surgery. After opening the abdominal cavity and evacuating 800 ml of

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**Figure 1.** Computerized tomography of the enlarged spleen and free abdominal fluid



**Figure 2.** Intraoperative finding of a cleft on the upper splenic pole



**Figure 3.** Macroscopic view of the removed enlarged spleen

hemoperitoneum, splenectomy was performed since the cleft on the upper pole of the spleen could not be surgically repaired. After splenectomy and revising the abdominal cavity for hemostasis, abundant lavage was performed and drains were placed in the left subphrenic space, prior to the closure of the abdominal wall. The postoperative was uneventful and the patient was recovering without any need for blood transfusion. The drains were removed at

the optimum time and on the day 6 the patient received vaccination against *Pneumococcus*, *Meningococcus* and *Haemophilus influenzae*. On day 7, the patient was discharged in good general condition with written information about post-splenectomy risks and an up-to-date vaccination card.

## DISCUSSION

Complications of infectious mononucleosis could be serious and fatal and splenic rupture is considered the most frequent cause of death in infectious mononucleosis [4]. Unfortunately, mortality rate is relatively high when rupture occurs (approximately 30%) [5]. Detailed mechanism of splenic rupture remains unclear. Some authors consider the increase in portal venous pressure and sudden compression of the enlarged spleen due to diaphragm contraction the most frequent factor that may cause spontaneous splenic rupture [6], while Patel et al. [7] consider the expanding of subcapsular hematoma the most important factor that causes splenic rupture in infectious mononucleosis. As our patient started feeling severe pain while she was playing volleyball, the most likely cause of the splenic rupture is sudden compression of the enlarged spleen. Splenic rupture, especially when a patient is hemodynamically unstable, should be treated by splenectomy, while some authors recommend transcatheter arterial embolization [1, 8]. We have treated our patient by splenectomy after a surgical consultation, in order to prevent sudden death. Repair was considered, but it was not possible to perform, due to spleen enlargement and high risk of bleeding. The patient was vaccinated against *Pneumococcus*, *Meningococcus*, and *Haemophilus influenzae*, as vaccination against these pathogens should be conducted after splenectomy [1]. Survival rate for patients who undergo splenectomy is high and is close to 100%. Therefore, the survival benefit from splenectomy outweighs post-splenectomy risks, since mortality rate in vaccinated patients is very low [9]. While this case concludes with the etiology of splenic rupture remaining unclear in regard to infectious mononucleosis, this report has important implications for clinicians of emergency, intensive care, general surgery, hematology, as well as the infectious disease medicine. The spleen is most vulnerable to rupture in the second and third week after the onset of infectious mononucleosis [4]. This report illustrates that splenic rupture may develop six weeks after the onset of infectious mononucleosis, which has been rarely described in medical literature to date. Also, the report shows that we need better monitoring of patients with infectious mononucleosis and, according to that, attending physicians may have to improve surveillance and treatment plans. It is necessary to warn patients to wait before undertaking sports activities for a long time after treating infectious mononucleosis, considering that the risk of spleen rupture obviously exists a couple of week after treating the disease. Patients should wait to start with sport activities at least two months if the size of the spleen is within normal range.

## REFERENCES

1. Dunmire SK, Hogquist KA, Balfour HH. Infectious Mononucleosis. *Curr Top Microbiol Immunol*. 2015; 390:211–40.
2. Bartlett A, Williams R, Hilton M. Splenic rupture in infectious mononucleosis: A systematic review of published case reports. *Injury*. 2016; 47(3):531–8.
3. Putukian M, O'Connor FG, Stricker P, McGrew C, Hosey RG, Gordon SM, et al. Mononucleosis and athletic participation: an evidence-based subject review. *Clin J Sport Med*. 2008; 18(4):309–15.
4. Rinderknecht AS, Pomerantz WJ. Spontaneous splenic rupture in infectious mononucleosis: case report and review of the literature. *Pediatr Emerg Care*. 2012; 28(12):1377–9.
5. Aubrey-Bassler FK, Sowers N. 613 cases of splenic rupture without risk factors or previously diagnosed disease: a systematic review. *BMC Emerg Med*. 2012; 12:11.
6. Koebrugge B, Geertsema D, de Jong M, Jager G, Bosscha K. Spontaneous splenic rupture in infectious mononucleosis. *JBR-BTR*. 2013; 96(4):234–5.
7. Patel JM, Rizzolo E, Hinshaw JR. Spontaneous subcapsular splenic hematomas as the only clinical manifestation of infection mononucleosis. *JAMA*. 1982; 247(23):3243–4.
8. Jenni F, Lienhardt B, Fahrni G, Yuen B. Nonsurgical management of complicated splenic rupture in infectious mononucleosis. *Am J Emerg Med*. 2013; 31(7):1152.e5–6.
9. Di Sabatino A, Carsetti R, Corazza GR. Post-splenectomy and hyposplenic states. *Lancet*. 2011; 378(9785):86–97.

## Спонтана руптура слезине после инфективне мононуклеозе

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### САЖЕТАК

**Увод** Спонтана руптура слезине је ретка али потенцијално фатална компликација инфективне мононуклеозе (ИМ). Јавља се само у 0,1–0,5% случајева ове болести. Циљ овог рада је био да прикаже болесницу са спонтаном руптуром слезине после ИМ.

**Приказ болесника** Болесница стара 22 године осећала се добро месец дана после лечења ИМ и почела је да тренира одбојку. Две недеље после почетка тренирања, у току тренинга осетила је јаке болове у трбуху. Дијагноза спонтане руптуре слезине потврђена је компјутеризованом томогра-

фијом. Урађена је спленектомија, а постоперативни ток је био повољан и она се опоравила без трансфузија.

**Закључак** Правовремена дијагноза и постављање индикације за оперативним лечењем од пресудног су значаја за излечење. Са спортским активностима се може отпочети два месеца после лечења ИМ уколико је величина слезине нормална.

**Кључне речи:** инфективна мононуклеоза, компликације; спонтана руптура; руптура слезине; етиологија, хирургија; спленектомија