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# Splenic Hematoma as a First Manifestation of Cytomegalovirus Infection

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## ABSTRACT

*Splenic rupture is rare but life threatening complication of mononucleosis syndrome. It has been suggested that subcapsular splenic hematoma formation precedes rupture. The case of 44-year-old, previously healthy, male with splenic hematoma occurring after rising of heavy cargo is reported. Mononucleosis syndrome was suggested based on routine laboratory tests (elevated white blood cell count with predominance of lymphocytes and raised serum transaminases) and CMV infection was confirmed by serological test. Nonoperative management was used since the patient was hemodynamically stable with no further signs of splenic rupture. The same approach has been used in growing number of cases of patients with spontaneous splenic rupture in mononucleosis syndrome. Importance of considering splenic hematoma and/or rupture if abdominal pain occurs in the course of mononucleosis syndrome is outlined as well as importance of routine laboratory tests in suspecting mononucleosis syndrome in otherwise clinically silent patient.*

**Key words:** splenic hematoma, cytomegalovirus infection, abdominal pain, nonoperative management

## Introduction

Cytomegalovirus (CMV) infection is ubiquitous of all human populations with seroprevalence rates up to 100 % depending on age and socioeconomic conditions of surveyed population<sup>1</sup>. CMV infection can cause variety of diseases ranging from clinically silent in most of immunocompetent hosts or if symptomatic usually manifesting itself as mononucleosis syndrome to congenital CMV disease in neonates and finally to most severe disease syndrome in immunocompromised patients<sup>1</sup>. Splenomegaly is more prominent feature in Epstein-Barr virus (EBV) than in CMV mononucleosis<sup>2</sup> and splenic rupture is rare but life threatening complication of mononucleosis syndrome<sup>3</sup>. It has been suggested that subcapsular splenic hematoma formation precedes rupture<sup>4</sup>. As abdominal pain is uncommon in mononucleosis syndrome

splenic hematoma/rupture must be considered whenever abdominal pain occurs<sup>4</sup>.

## Aim

To indicate that common infection can have unusual presentation as is illustrated in our case where splenic hematoma was the only manifestation of CMV infection.

## Case Report

A 44-year-old, previously healthy, male was admitted to Emergency department with abdominal pain which appeared after rising of heavy cargo five days ago. The

patient was afebrile with slightly tender upper abdominal wall. His vital signs were normal. Laboratory findings showed the following: hemoglobin 124 g/L, hematocrit 36%, white blood cells  $16.0 \times 10^9/L$  with predominance of lymphocytes (66 %) on differential count, platelets  $150 \times 10^9/L$ , lactate dehydrogenase 375 IU/L (normal < 241), aspartate transaminase 76 IU/L (normal < 38), alanine transaminase 121 (normal < 48), prothrombin time 1.07 and erythrocyte sedimentation rate 20. Bilirubin, alkaline phosphatase, amylase, urea, creatinine were normal. Abdominal ultrasound showed enlarged spleen (125×45 mm) with hypoechoic area measuring 54×41 mm on convex side of upper pole, and free liquid in left subphrenium (Figure 1). An abdominal CT scan demonstrated splenomegaly with a crescentic low-density fluid collection along the lateral margin of the spleen corresponding to subcapsular splenic hematoma (Figure 2). Mononucleosis syndrome was suggested based on leu-

kogram and raised serum transaminases. The diagnosis of acute Cytomegalovirus infection was confirmed by the presence of IgM antibodies to CMV in the serum. Both IgM and IgG antibodies to EBV were positive. Serological tests for hepatitis B and C as well as for HIV were negative. The patient remained hemodynamically stable without requiring blood transfusion and was discharged from the hospital after two weeks.

## Discussion

Splenic involvement in mononucleosis syndrome is common, although more prominent in EBV than in CMV mononucleosis<sup>2</sup>. Lymphocytes infiltration of the spleen, including capsule, coupled with splenic enlargement compromise the spleen's architecture and facilitates rupture which may be preceded by subcapsular bleeding<sup>5,6</sup>. Because in about one half of the cases of splenic rupture a history of trauma may be elicited, avoidance of contact sports and other heavy physical activity is encouraged in the first few weeks after diagnosis<sup>4</sup>.

In our patient's case, among others, routine laboratory tests were done which revealed elevated white blood cell count with lymphocytosis and elevation of serum transaminases leading to the diagnosis of mononucleosis syndrome and subsequently, based on the serological test, CMV infection.

The mechanism leading to subcapsular splenic hemorrhage in our patient's case, i.e. after lifting heavy weight, is probably increase in portal venous pressure caused by Valsalva manoeuvre, causing vascular engorgement in enlarged spleen<sup>7</sup>.

Due to hemodynamic stability and no further signs of splenic rupture nonoperative management was chosen in our patient's case as it is also in growing number of cases of patients with spontaneous splenic rupture in mononucleosis syndrome who are hemodynamically stable<sup>8–11</sup>. The advantages of nonoperative management are in elimination of post-splenectomy sepsis<sup>12</sup> and avoidance of potential perioperative complications. By preservation of the spleen it could be probably assumed that its structural healing correlates with continuation of immunological function<sup>11</sup>. However, non-operative management also poses certain risks: possibility of delayed splenic rupture<sup>13,14</sup> and as a result, longer period of follow-up and restriction of activity<sup>14</sup>.

## Conclusion

Abdominal pain is uncommon sign in infectious mononucleosis syndrome and if occurs in the course of disease, splenic hematoma and/or rupture must be considered. Vice versa when a patient is admitted to a hospital because of upper abdominal pain and diagnosis of splenic hematoma is made, mononucleosis syndrome should be included among possible causes. In such circumstances of otherwise asymptomatic patient, as illustrated in our case, routine laboratory tests can be of a great value.

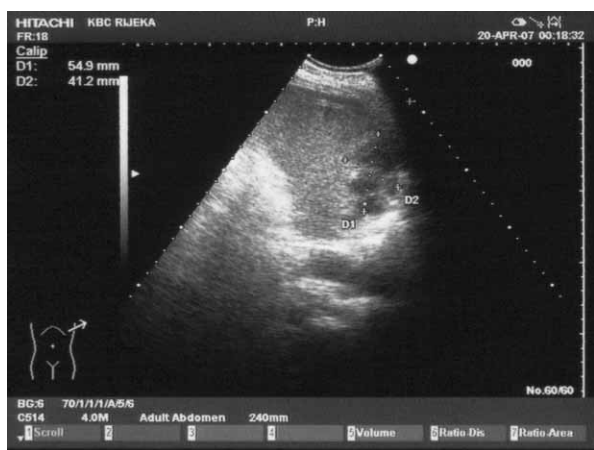


Fig. 1. Abdominal ultrasound image showing enlarged spleen (125×45 mm) with hypoechoic area measuring 54×41 mm on convex side of upper pole, and free liquid in left subphrenium.

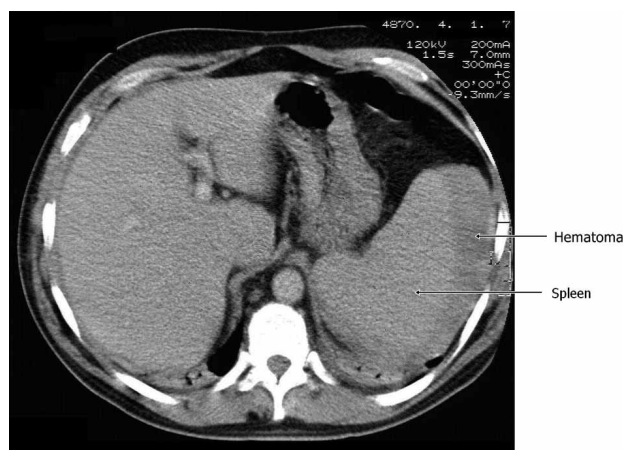


Fig. 2. Abdominal CT scan demonstrating splenomegaly with a crescentic low-density fluid collection along the lateral margin of the spleen corresponding to subcapsular splenic hematoma.

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## HEMATOM SLEZENE KAO PRVA MANIFESTACIJA CITOMEGALOVIRUSNE INFEKCIJE

### SAŽETAK

Ruptura slezene je rijetka, no po život opasna komplikacija sindroma infekciozne mononukleoze. Subkapsularni hematoma slezene prethodi samoj rupturi. Prikazan je slučaj 44-godišnjeg, prethodno zdravog, muškarca s hematomom slezene nastalim nakon podizanja teškog tereta. Temeljem rezultata rutinskih laboratorijskih pretraga (leukocitoza s limfocitozom i povišena razina transaminaza u serumu) posumnjalo se na sindrom mononukleoze, a dijagnoza CMV infekcije potvrđena je serološkim testom. Budući je bolesnik bio hemodinamski stabilan bez daljnjih znakova rupture slezene, liječen je konzervativno što je i pristup liječenju sve većeg broja slučajeva bolesnika sa spontanom rupturom slezene u ovom sindromu. Istaknuta je važnost sumnje na hematom i/ili rupturu slezene u slučaju pojave bolova u trbuhu tijekom infektivne mononukleoze kao i značaj rutinskih laboratorijskih pretraga u postavljanju dijagnoze ovog sindroma u inače asimptomatskog bolesnika.