

Isolated Spleen Infarction in Patient With Covid-19

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ABSTRACT:

Purpose: A case-based evaluation was made about the place of Covid-19 in the etiology of splenic infarction, the clinic and treatment of splenic infarction.

Material and Methods: A case of splenic infarction in a 74-year-old male patient who developed after Covid-19 was presented.

Conclusion: Spleen infarction is a rare cause of acute abdomen secondary to an underlying hematological disease or trauma. Sometimes, a virus that progresses with a hematological disorder, such as Covid-19, can cause this disease. The algorithm to be followed in the treatment should be an effective treatment for the underlying disease. Laparoscopic splenectomy can be performed safely if medical treatments do not improve.

Keywords: Covid-19, spleen infarction, laparoscopic splenectomy, thrombosis, embolism

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INTRODUCTION

Infarction of the spleen means that there is an obstruction in the arterial or venous structures of the spleen, which is effective in feeding, as a result of the cessation of blood flow and the destruction of the oxygen-deprived tissue. The spleen may be affected in whole or in part. It is a situation related to the area fed by the occluded vascular structure. Etiology may be hematological disorder, hypercoagulation, malignancy or trauma (Kato and Gleeson, 2019). Very different clinical effects of the Covid-19 virus, which was first identified in China in December 2019, were observed. These include fever, cough, shortness of breath, gastrointestinal symptoms, cardiac effects, and central nervous system involvement. Covid-19 causes serious clinical conditions by increasing d-dimer values and the development of complications related to thromboembolism (Ciotti et al., 2020). In our study,

we would like to present an isolated splenic infarction that developed after contracting the covid-19 virus in a patient.

Case Report

A 74-year-old male patient presented to the emergency service with the complaint of abdominal pain localized to the left upper quadrant of the abdomen for 1 week. The patient had a history of covid. On physical examination, there was marked tenderness in the left upper quadrant of the abdomen. The patient, whose vital signs were stable, was first evaluated cardiologically. Cardiac values were normal. The bleeding profile was within the normal range. In the abdominal tomography of the patient, a triangular shaped image consistent with an infarct, extending from the subcapsular area to the hilum, with a craniocadual size of approximately 7 cm, located in the mid-lower pole of the spleen, was

observed. The patient was hospitalized. Follow-up was initiated with anticoagulant and antibiotic therapy. In the follow-up of the patient, it was observed that the spleen infarct area increased to 9 cm in the control tomography taken due to the increase in his complaints (Figure 1). The patient was taken to surgery because acute abdomen symptoms also started to develop, and laparoscopic splenectomy was performed. The patient, whose complaints regressed and no additional problem was observed in the postoperative follow-up, was discharged in good condition and with recommendations.

Purpose and Type of the Study

This study was prepared retrospectively by performing data analysis. We aimed to make a case-

based evaluation about the place of Covid-19 in the etiology of splenic infarction, the clinic and treatment of splenic infarction.

Sampling and participant

A case of splenic infarction in a 74-year-old male patient who developed after Covid-19 was presented.

Data Collection Tools

The patient data used in the study were obtained from the hospital's data processing center records.

Informed consent form

Informed consent form was signed for all procedures performed on the patient.

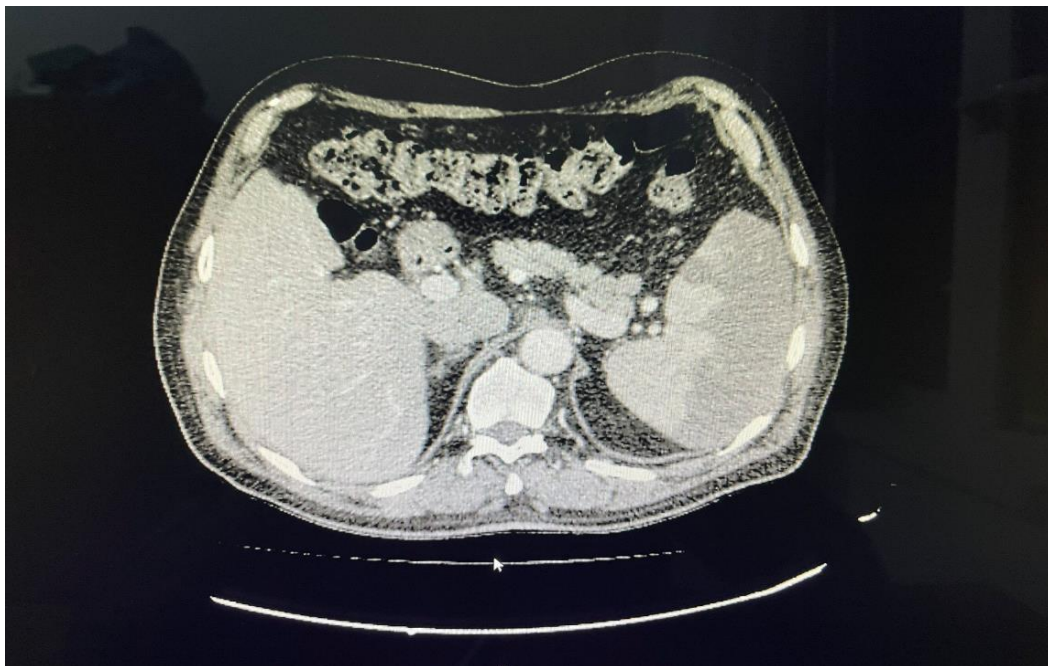


Figure 1: Tomographic image of spleen infarct

DISCUSSION

The spleen is a hematopoietic organ. It is responsible for the balance of blood products. The spleen is a filtering organ with antibacterial effects. Infarction of the spleen, as with mesenteric ischemia (Gömeç et al., 2022), is a condition in which the remaining

ischemic tissue becomes necrotic. While a wedge-shaped area on the spleen may be affected, we can sometimes see that the entire spleen tissue is involved. This event is related to the extent to which the splenic artery or vein is affected. After the spleen infarction, medical treatments are tried. Surgical

treatment may be required mostly in case of complications, presence of acute abdomen findings or abscess. Ultrasound is helpful in diagnosis, but a demerging line may occur after 24 hours. Doppler ultrasound should be performed if embolism is suspected. In general, the diagnosis is made by tomography in emergency services. Computed tomography can diagnose with 75% non-contrast hypodense area image (Cohen, Mitty and Mendelson, 1984).

The mainstay of treatment is anticoagulants, hydration, antibiotic therapy or cause-directed therapy. Heparin acts through antithrombin (AT) III and inhibits thrombin, factor IXa and factor Xa. Dose adjustment and monitoring are required. It is followed by aPTT or coagulation time. 5000-10000 IU intravenous (IV) therapeutic bolus is administered. Prophylactically, 5000 IU subcutaneously (sc) can be used 2 or 3 times. Complications specific to heparin can be observed after use for more than 7 days. Low-dose heparin (LMWH) inhibits factor Xa. It does not inactivate thrombin. More effective results are obtained at lower doses. Two subcutaneous doses are sufficient. Also, aPTT tracking is not required. It can be easily used by the outpatient. The side effect profile is quite low. With these properties, LMWH is more advantageous. Warfarin inhibits vitamin K dependent coagulation factors (Factors IIa, VIIa, IXa and Xa). After 4-5 days, it increases to the effective dose. It is not suitable for application in emergency conditions. PT is more important in follow-up, it rises more quickly. After a 10 mg loading dose, the maintenance dose is adjusted to keep the INR between 2-3. Warfarin dose follow-up is done with aPT in the early period and then with the INR value. Vitamin K or fresh frozen plasma (FFP) can be used as an antidote. It is contraindicated in pregnancy. It interacts with many drugs. Aspirin is a platelet inhibitor. There is no tracking parameter. The platelet effect returns more than 50% in 5-6 days after aspirin is discontinued. It has algorithms such as waiting 5-7 days for surgery. Clopidogrel impairs platelet functions by inhibiting adenosine diphosphate (ADP). Platelet functions return 7 days after discontinuation. New oral anticoagulants (dabigatrin, rivoraxaban, apixaban, edoxaban) inhibit factor IIa and Xa. There are no antidotes. No

tracking parameters (Murat, and Sevgi, 2015; Hirsh et al., 1998; Yilmaz, 2019). Especially low molecular weight heparin is preferred as an anticoagulant in spleen infarction. The reasons for this are the early onset of the effect, the sufficient use of two doses per day, the low side-effect profile, the lack of need for dose follow-up. In addition, the burden of oral anticoagulants on other body systems and their interactions with other drugs are also important.

Antibiotherapy is a controversial issue by most centers. In fact, abscessing of the spleen infarct supports the notion that the use of antibiotics is necessary. Antibiotics effective against gram-negative and anaerobic bacteria are preferred. If abscess occurs, this treatment protocol is continued after splenectomy (Kamaya, Weinstein and Desser, 2006). The most important criterion in the treatment of spleen infarcts is the underlying disease. The cause of splenic infarction may be haematological disorder, hypercoagulation, malignancy or trauma. It is necessary to eliminate these causes or to provide effective treatment. In our case, there was isolated splenic infarction. The patient had no significant pathology other than a history of covid. However, it has been reported in studies that covid positivity increases the risk of embolism with blood coagulation and increased d-dimer values. It is thought that the main factors leading to thrombosis may be endothelial damage by binding of the virus to ACE2, vascular pathologies observed in sepsis, or stasis developing in immobility. For this reason, a vascular embolism that may develop results in infarction in the fed tissue (Mourad and Levy, 2020; Chang, 2018; Tang et al., 2019). We think that the infarct in our case was caused by these reasons.

CONCLUSION

Spleen infarction is a rare cause of acute abdomen. If detected, it should be hospitalized. The patient can be followed under hydration, antibiotherapy and anticoagulant therapy. Treatment of the underlying disease is also necessary. Surgery can be planned in case of deterioration in the patient's clinical condition, development of acute abdomen or detection of spleen abscess. Laparoscopic splenectomy surgery can be performed safely.

Conflict of Interest

There is no conflict of interest.

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