

The incidence of splenic hemangioma and its rupture risk

Ersin Gundogan¹, Mufit Sansal¹, Orgun Gunes¹, Eray Can Akinci², Tarik Emre Erkenekli², Fatih Sumer¹, Ramazan Kutlu³, Cuneyt Kayaalp¹

¹Inonu University, Faculty of Medicine, Department of General Surgery, Malatya, Turkey

²Inonu University, Faculty of Medicine, Medical Student, Malatya, Turkey

³Inonu University, Faculty of Medicine, Department of Radiology, Malatya, Turkey

Copyright © 2018 by authors and Annals of Medical Research Publishing Inc.

Abstract

Aim: The incidence of splenic hemangioma was reported in a wide range (0.03-14%) based on the autopsy data between the years of 1895-1965. The suggested treatment in an early systematic review was routine splenectomy due to the fear of splenic rupture. We aimed to determine the incidence of splenic hemangiomas in the modern imaging era, to evaluate the rupture risk and the necessity of splenectomy for every splenic hemangioma.

Material Method: Between January and December 2016, the reports of all patients who had any abdominal imaging modalities in our hospital were electronically scanned for splenic hemangiomas. Repeated examinations were excluded. Age, gender, reason of radiological examination, imaging modality, number and the size of the splenic hemangiomas, hematological test and the follow-up results were evaluated.

Results: Total 31 of 30,021 (0.1%) patients with abdominal imaging examinations were diagnosed as splenic hemangioma. Fifty-eight percent were female and the mean age was 50.1±15.4 (median and range, 52 and 12-75). Only two referred with abdominal pain but the pain localizations were incompatible with hemangiomas. Mean hemoglobin values were found to be 13.2±2.2 gr/dl and platelet counts were found to be 249.300±115.800. The dimensions of the detected lesions were mean 13.1± 8.1mm (median 1, range 0.5-4.5 cm) and only one patient had multiple involvement. Splenic rupture was detected in a patient with chronic renal failure and splenectomy was performed.

Conclusion: Routine splenectomy for <4.5 cm splenic hemangiomas is not essential but longer follow-up is required. More studies for 4.5 cm< splenic hemangiomas are necessary.

Keywords: Spleen; Splenectomy; Splenomegaly; Cavernous.

INTRODUCTION

Splenic hemangioma was first described by Rokitansky in 1861 and it is the most common benign tumor of spleen with cysts. In 1895, Hodges performed the first surgical excision for splenic hemangioma (1). In addition to being detected incidentally, Kasabach Merritt phenomenon, portal hypertension, anemia and bleeding due to thrombocytopenia or coagulopathy due to the sequestration of blood components in the hemangioma can be the diagnostic features. The most feared complication is the splenic rupture and is very rare. The frequency of splenic hemangiomas is shown between 0,03% and 14% in autopsy series (2). This information, which is unique in the literature, is based on the end of the 1800's. In addition, 25% of the rupture rate based on this information needs to be questioned as a result.

However, there is no study to determine the frequency of the incidence among living individuals. We aimed to determine the incidence of splenic hemangiomas in the modern imaging era to evaluate the rupture risk and the necessity of splenectomy for every splenic hemangioma.

MATERIAL and METHODS

All patients who were admitted to our hospital in 2016 and who had visual imaging examinations were included in the study. A total of 31,937 audits have been achieved. Among them, repeated examinations were excluded (1916 imaging). Of the remaining 30,021 patients, the "spleen-splenic-hemangioma" key words were searched through our hospital system. In the imaging of the abdomen, all patients with hemangiomas (liver, kidney, spleen) were detected. Among them, 31 patients with

Received: 09.04.2018 Accepted: 21.05.2018 Available online: 29.05.2018

Corresponding Author: Ersin Gundogan, Inonu University, Faculty of Medicine, Department of General Surgery, Malatya, Turkey
E-mail: ersingundogan@hotmail.com

splenic hemangioma were identified by re-evaluation of these patients; age, gender, reason for admission, hemoglobin concentration, platelet count, ultrasound, computed tomography, magnetic resonance imaging findings, lesion size, and follow-up data were evaluated. Descriptive statistics were performed for all data, reported as mean values and percentages. Continuous variables were analyzed by unpaired t-test. Categorical variables were analyzed by Chi-square test and Fisher-Exact test. Statistical significance was taken as $p < 0.05$. The data was analyzed using SPSS version 16.0 and Microsoft Excel 2013.

RESULTS

Total 30,021 patients who were referred to our hospital for one year were studied and 31 (0.1%) cases of splenic hemangioma were detected. Eighteen of the patients with splenic hemangioma were female (58%) and the mean age was 50.1 ± 15.4 . Two of the patients were admitted with abdominal pain incompatible with splenic hemangioma. Other reasons for presentation were non-spleen malignancies, hematological diseases, infectious causes, urinary diseases and reasons for urgent application (Table 1).

Table 1. Reasons for referral to the hospital

Reasons for Application		N
Emergency Application	Trauma	2
	Right quadrant pain	1
	Aortic aneurysm	1
	Epigastric pain	1
Malignancy	Breast cancer	2
	Hepatocellular carcinoma	2
	Pancreas cancer	1
	Malignant melanoma	1
	Liver cirrhosis	2
	Mass in the liver	1
	Lung cancer	1
Hematologic Discomfort	Factor 8 deficiency	1
	Anemia	1
	Vascular thrombosis	1
Infectious Causes	Hepatitis B	6
Urinary diseases	Urinary infection	1
	Polycystic kidney disease	1
	Kidney transplantation	1
	Renal cyst	1
Other	Myelofibrosis	1
	Liver cyst	1
	Chronic pancreatitis	1

Six patients (19.3%) were admitted with hepatitis B clinic. Hemoglobin values were 13.25 ± 2.2 gr/dl on average, while platelet values were 249.300 ± 115.800 on average. Considering the sensitivity rates in imaging studies;

magnetic resonance 12/17 (70%), computed tomography 8/16 (50%), and ultrasound 12/24 (50%). When compared the imaging methods, there was no significant difference in success rate of between the radiological modalities ($p=0.21$). The mean size of the hemangiomas were 1.3 ± 0.8 cm (median and range 1.0 and 0.5-4.5 cm). When the follow-up results of the patients are examined, a patient was admitted to the operation due to splenic rupture and died on the first postoperative day (1/31- 3.2%). Since 2009, he or she was a patient with breast cancer and chronic renal insufficiency. One cm hemangioma was present in the spleen location of the patient who had a chemotherapy history and received dialysis treatment. Suggesting that rupture could not be caused by hemangiomas. Complications related to splenic hemangioma were not detected in other patient survival 33 ± 18.0 months during monitoring.

DISCUSSION

Hemangiomas are the most common lesions of the spleen, usually followed without intervention, like cysts. It has been reported that these lesions originate congenitally from sinusoidal epithelium (3). Histological examination reveals an increased vascular network consisting of a single endothelium layer. It can often be seen in the cavernous type and can be a part of single and multiple general angiomatosis (3,4). The reported incidence was between 0.03% and 14% based on autopsy series and previous literature (2). Our study also showed that this ratio was 0.1% in patients in living people. As far as we know, there were no prior studies on the frequency of splenic hemangiomas in living human beings. We concluded that this rate can be even lower in the whole population because our work is done only on the patient population.

In our study, it was seen that the mean age of the patients diagnosed with splenic hemangiomas was 50 and the dominant female gender. In the literature, it is seen that there are also studies indicating that the age group is often around the age of 60 besides the studies (5), indicating that the age group is often in the 30-40 age group (2). There are also studies that separately provide information on the dominance of men and women in terms of gender dominance. The most obvious difference, however, is Husni et al. reported as 1.4 times in the male direction (2).

Splenic hemangioma is diagnosed by imaging methods. Besides the most sensitive magnetic resonance imaging, computed tomography and abdominal ultrasound are also used (6,7). Although our study was limited in number of patients, it was found that magnetic resonance imaging was more sensitive than other imaging methods, but this difference was not statistically significant ($p=0.21$). Ultrasound was the most preferred imaging method in our series with satisfactory results. We thought that ultrasound can be the first line screening modality for splenic hemangiomas.

Splenic hemangiomas are lesions that are followed

without intervention and treatment. However, splenectomy is recommended in patients who are predisposed to large, splenic rupture and blunt trauma of the lesion. Hemangiomas are often caught below 4 cm and are asymptomatic (2,8). The most common symptom encountered is left upper quadrant pain (5). In our study, no symptoms related to splenic hemangiomas were detected in any of our patients, and no elective splenectomy was recommended. In addition, the mean lesion size of our patients was found to be less than 4.5 cm in accordance with the literature.

Splenic hemangiomas can rarely cause splenomegaly and splenic rupture (9,10). Kasabach-Meritt phenomenon, portal hypertension, anemia, thrombocytopenia and coagulopathy have also been reported as the complications (11). In our study, no pathology was found in hematologic parameters in any of our patients. However, in a patient with chronic renal failure, splenic rupture developed and the patient died after the operation (3.2%). When the literature is reviewed, it is also reported that splenic rupture rates are 25% (2).

CONCLUSION

Routine splenectomy for <4.5 cm splenic hemangiomas is not essential but longer follow-up is required. More studies for 4.5cm< splenic hemangiomas are necessary.

Competing interests: The authors declare that they have no competing interest.

Financial Disclosure: There are no financial supports

Ethical approval: This work has been approved by the Institutional Review Board.

REFERENCES

1. Hodge GB Jr. Angioma cavernosum of the spleen. Med Rec 1895;48:418.
2. Husni EA. The clinical course of splenic hemangioma with emphasis of spontaneous rupture. Arch Surg 1961;83:681-8.
3. Pines B, Rabinovitch J. Hemangioma of the spleen. Arch Pathol 1942;33:487-503.
4. Bevilacqua C, Toni G, Tuoni M. A case of cavernous hemangioma of the spleen. Tumori 1976;62(5):485-92.
5. Willcox TM, Speer RW, Schlinkert RT, Sarr MG. Hemangioma of the spleen: presentation, diagnosis, and management. J Gastrointest Surg 2000;4(6):611-3.
6. Ramani M, Reinhold C, Semelka RC, Siegelman ES, Liang L, Ascher SM, et al. Splenic hemangiomas and hamartomas: MR imaging characteristics of 28 lesions. Radiology 1997;202(1):166-72.
7. Vilanova JC, Barceló J, Smirniotopoulos JG, Pérez-Andrés R, Villalón M, Miró J, et al. Hemangioma from head to toe: MR imaging with pathologic correlation. Radiographics 2004;24(2):367-85.
8. Edoute Y, Ben-Haim SA, Ben-Arie Y, Fishman A, Barzilai D. Difficult preoperative diagnosis of a patient with sclerosing splenic hemangioma. Am J Gastroenterol 1989;84(7):817-9.
9. Rekha S, Lewin S, Lilly S, Vincent S, Ramachandra C, Chandrasekhara MK, et al. Hemoperitoneum secondary to splenic rupture in a neonate. Indian pediatr 1992;29(12):1575-6.
10. Pachi M, Elmalik K, Cohen M, Kamupira S, Walker J, Murthi G. Ruptured splenic cavernous hemangioma in a neonate. J Pediatr Surg 2008;43(2):407-9.
11. Wilkins B, Wright DH. Illustrated pathology of the spleen. Cambridge University Press 2000.