

# Hepatic Hemangioma in a Cluster of Iranian Population

Amir A'lam Kamyab<sup>1\*</sup>, Kiara Rezaei-Kalantari<sup>2</sup>

<sup>1</sup>Department of Radiology, Iran University of Medical Sciences, Tehran, Iran, <sup>2</sup>Rajaie Cardiovascular Medical and Research Center, Iran University of Medical Sciences, Tehran, Iran

## Abstract

**Introduction:** Hemangioma is the most common benign lesion of the liver. It is mostly asymptomatic and may be found incidentally during cross-sectional liver or abdominal imaging. This study aimed to investigate the prevalence and clinical characteristics of hepatic hemangioma in an Iranian population. **Materials and Methods:** This retrospective study was conducted between July and November 2017 in Firoozgar Hospital affiliated to Iran University of Medical Sciences, Tehran, Iran. The study population consisted of adult patients (>18 years) referred for transabdominal ultrasonography to ultrasound unit of the hospital. **Results:** Totally, 1985 patients were included in the study. There were 1282 women (64.5%) and 703 men (35.4%). A total of 47 hemangiomas were found in 41 patients. The prevalence of hemangioma was 2.04% in our study population. Four patients had more than one hemangioma; all of them were women. Twelve men (1.70%) versus 29 women (2.26%) found to have hemangioma. The mean age of patients with hemangioma was  $47.65 \pm 14.84$  years. Thirty-four patients (82.9%) had hemangioma in their right lobe of the liver whereas seven patients (17.1%) had hemangioma in the left lobe of the liver. The mean diameter of hemangioma was  $16.70 \pm 8.42$  mm. The mean diameter of hemangioma in women was  $17.2 \pm 9.33$  mm and in men was  $15.25 \pm 4.91$  mm ( $P = 0.495$ ). **Conclusion:** Hepatic hemangioma is prevalent in the Iranian population. It is more prevalent among women and in the VII segment of the liver.

**Keywords:** Computed tomography, hemangioma, ultrasound

## INTRODUCTION

Hemangioma is the most common benign lesion of the liver, with an estimated prevalence ranging from 0.4%–7% in autopsy studies.<sup>[1]</sup> They are believed to be cavernous vascular malformations from the congenital period that gradually becomes ectatic and covered by a thin layer of the endothelium.<sup>[2]</sup> They are mostly asymptomatic and may be found incidentally during cross-sectional liver or abdominal imaging for other reasons.<sup>[3]</sup> Giant hemangioma (>5 cm), however, may produce symptoms such as abdominal pain, early satiety, and nausea, primarily due to compression of adjacent organs.<sup>[4]</sup>

The epidemiology of hepatic hemangioma has not been elucidated well. The reported prevalence of hepatic hemangioma is ranging from 0.4% to 20%.<sup>[5]</sup> This may be secondary to different imaging modalities used for the diagnosis of hemangioma. There is a significant female predominance, and most cases are diagnosed among middle-aged women.<sup>[5]</sup> This may be secondary to the influence of hormones, estrogen and

progesterone, that have a trophic effect on the tumor.<sup>[6]</sup> The enlargement of the tumor during pregnancy and treatment with oral contraceptive pills potentiates this hypothesis.<sup>[7]</sup>

The outcomes of patients with hemangioma of the liver are not well studied. This study aimed to investigate the prevalence and clinical characteristics of hepatic hemangioma in an Iranian population.

## MATERIALS AND METHODS

This retrospective study was conducted between July and November 2017 in Firoozgar Hospital, Iran University of Medical Sciences, Tehran, Iran. The study population consisted of adult patients (>18 years) referred for transabdominal ultrasonography to ultrasound unit of the hospital. They had been referred for the evaluation of nonspecific abdominal pain or other suspected abdominal pathologies. Ultrasound examinations were performed by three expert radiologists in

**Address for correspondence:** Dr. Amir A'lam Kamyab, Department of Radiology, Iran University of Medical Sciences, Tehran, Iran. E-mail: dr\_amir\_k02@yahoo.com

Received: 06-10-2018 Accepted: 17-12-2018 Available Online: 06-02-2019

### Access this article online

#### Quick Response Code:



**Website:**  
www.jmuonline.org

**DOI:**  
10.4103/JMU.JMU\_98\_18

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** reprints@medknow.com

**How to cite this article:** Kamyab AA, Rezaei-Kalantari K. Hepatic hemangioma in a cluster of Iranian population. J Med Ultrasound 2019;27:97-100.

the field of sonography. A hemangioma was diagnosed only when there were typical clues for diagnosis such as a sharp, well-defined hyperechoic, homogenous lesion. Patients with heterogeneous mass, with calcification or cystic components, and with pedunculated lesions were excluded from the study. Patients with suspected lesions were not included and referred for other imaging studies including magnetic resonance imaging (MRI) or computed tomography (CT) scan of the liver.

Patients with known or suspected liver cirrhosis in the ultrasound or history of chronic liver diseases such as hepatitis B virus infection, hepatitis C virus infection, autoimmune hepatitis, and hemochromatosis were excluded from the study. Patients with known diagnosis of cancer of any type and location were excluded. Patient characteristics including sex and age were recorded. The largest diameter of the mass, number of hemangiomas, location in the right lobe or left lobe, and location in the hepatic segments were recorded. Giant hemangioma was defined as hemangioma with a diameter of >5 cm.

Frequency and percentage of hemangioma in the liver segments and according to size were categorized and depicted in tables. Statistical analysis was performed with IBM SPSS Statistics Software 16.0 (SPSS Inc., Chicago, IL, United States). Tests of significance were two-sided, and  $P < 0.05$  was considered to be statistically significant.

The study was carried out according to the Declaration of Helsinki as revised in Seoul, 2008. Patients were informed about the harm and benefits of the study and written informed consent was obtained from the participants. The study protocol was approved by the Institutional Review Board of Iran University of Medical Sciences, Tehran, Iran.

## RESULTS

Totally, 1985 patients who underwent abdominal ultrasound were included in the study. The mean age of patients was 43.4 years. There were 1282 women (64.5%) and 703 men (35.4%). The mean age of men was 47.6 years and mean age of women was 41.2 years. A total of 47 hemangiomas were found in 41 patients. The prevalence of hemangioma was 2.04% in our study population. Four patients had more than one hemangioma; all of them were women. Twelve men (1.70%) versus 29 women (2.26%) found to have hemangioma. The mean age of patients with hemangioma was  $47.65 \pm 14.84$  years.

Thirty-four patients (82.9%) had their hemangioma in their right lobe of the liver whereas seven patients (17.1%) had hemangioma in the left lobe of the liver. Age distribution of hemangiomas is outlined in Table 1. The distribution of hemangiomas according to the hepatic segments is outlined in Table 2.

Mean diameters of hemangiomas were  $17.2 \pm 9.33$ ,  $15.25 \pm 4.91$ , and  $16.70 \pm 8.42$  mm in female and male groups and in general, respectively ( $P = 0.495$ ) [Figures 1-3]. Giant

hemangioma defined as hemangioma diameter >50 mm was detected in two patients (4.87%); both of them were female. The mean diameter of hemangioma in patients younger than 50 years was  $17.8 \pm 9.57$  mm compared to the  $14.76 \pm 5.61$  mm in those over 50 years ( $P = 0.239$ ). Table 3 shows the frequency of liver hemangioma based on their largest diameter. Figure 4 shows the frequency of liver hemangioma based on gender.

## DISCUSSION

The overall prevalence of hemangioma diagnosed by transabdominal ultrasound in our study population was 2%. The prevalence among women was higher than men (2.26% vs. 1.7%), whereas multiple hemangiomas and giant hemangiomas were only found in women. Hepatic hemangiomas were most commonly detected between the age of 40 and 50 years and in segment VII of the liver. Although the mean diameter of hemangiomas was higher in women than men, this was not statistically significant; in addition, hemangiomas tended to

**Table 1: Age distribution of hemangioma diagnosed by abdominal ultrasound in our series**

Age category (year)	Frequency (%)
20-30	8 (17.02)
30-40	7 (14.89)
40-50	16 (34.04)
50-60	8 (17.02)
60-70	4 (8.51)
70-80	2 (4.25)
>80	2 (4.25)
Total	47 (100)

**Table 2: Distribution of hemangiomas based on the hepatic segments**

Segment	Frequency (%)
II	1 (2.12)
III	1 (2.12)
IV	2 (4.25)
V	2 (4.25)
VI	8 (17.02)
VII	14 (29.78)
VIII	6 (12.07)
Undetermined	13 (27.65)

**Table 3: Frequency of hemangioma diagnosed according to their size**

Size (mm)	Frequency (%)
<10	7 (14.89)
10-20	26 (55.31)
20-30	11 (23.40)
30-40	1 (2.12)
40-50	0 (0)
>50	2 (4.25)
Total	47 (100)



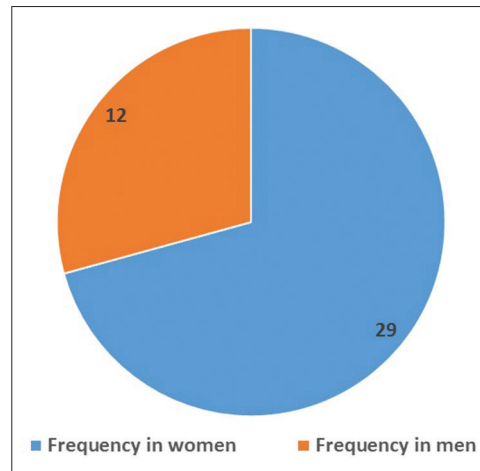
**Figure 1:** A large hyperechoic mass with a regular border in segment VII of the liver typical for a hemangioma



**Figure 2:** A single large lobulated well-defined echogenic mass (35 mm × 20 mm) in segments VII and VIII of the liver



**Figure 3:** A small, well-defined homogenous hyperechoic mass (measured 10 mm × 6 mm) in segment IV



**Figure 4:** Frequency of liver hemangioma based on the gender

be larger in younger age groups although this did not reach a statistical significance. Majority of hepatic hemangioma in our study population was diagnosed in the right lobe of the liver.

To the best of our knowledge, this is the first report of the prevalence of hepatic hemangioma among the Iranian population without chronic liver disease. Despite seeming a common liver lesion in this population, there is a paucity of data both on prevalence, natural history, and risk factors, among which there is an index study, i.e. Etemadi *et al.* evaluated 198 patients with hepatic hemangioma to see the natural course and associated diseases. Seven percent of their patients underwent surgical resection in a mean follow-up period of 2 years, one due to rupture and others due to increasing size or pain unresponsive to medications; however, they did not report the prevalence of hemangioma. Besides, their patients had been selected from a hepatology clinic.<sup>[8]</sup> Mocchegiani *et al.* reported a prevalence of 2.5% among an Italian population using CT scan or MRI.<sup>[5]</sup> While it is comparable to our results, their method of imaging was different, and interpretation of data should be done conservatively. They also reported a higher

prevalence of giant hemangioma compared to our study. Our study is congruent with previous studies showing a female predominance of hepatic hemangioma.<sup>[9]</sup> Giant hemangioma and multiple hemangiomas were also exclusively diagnosed among the women in our study population.

Hepatic hemangioma is most of the time diagnosed by a transabdominal ultrasound when findings are typical. Fine-needle aspiration or biopsy has a limited role for the diagnosis of hepatic hemangioma due to the high risk of massive hemorrhage.<sup>[10]</sup> Atypical lesions should be further investigated with contrast-enhanced imaging studies such as CT scan and MRI.<sup>[11]</sup>

We excluded patients with cirrhosis and malignancy from our study population due to the possible alternative diagnosis of hepatocellular carcinoma or metastasis in this subgroup. In these patients, diagnosis cannot be made only based on the findings of ultrasound and complementary imaging techniques such as contrast-enhanced CT scan and MRI.<sup>[12]</sup>

Our study is limited in terms of evaluation of outcomes of patients with hemangioma and lack of medication history

or some physical findings of patients. This is mostly due to retrospective nature of the study.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- Ishak KG, Rabin L. Benign tumors of the liver. *Med Clin North Am* 1975;59:995-1013.
- Mathieu D, Zafrani ES, Anglade MC, Dhumeaux D. Association of focal nodular hyperplasia and hepatic hemangioma. *Gastroenterology* 1989;97:154-7.
- Farges O, Daradkeh S, Bismuth H. Cavernous hemangiomas of the liver: Are there any indications for resection? *World J Surg* 1995;19:19-24.
- Pateron D, Babany G, Belghiti J, Hadengue A, Menu Y, Flejou JF, *et al.* Giant hemangioma of the liver with pain, fever, and abnormal liver tests. Report of two cases. *Dig Dis Sci* 1991;36:524-7.
- Mocchegiani F, Vincenzi P, Coletta M, Agostini A, Marzioni M, Baroni GS, *et al.* Prevalence and clinical outcome of hepatic haemangioma with specific reference to the risk of rupture: A large retrospective cross-sectional study. *Dig Liver Dis* 2016;48:309-14.
- Conter RL, Longmire WP Jr. Recurrent hepatic hemangiomas. Possible association with estrogen therapy. *Ann Surg* 1988;207:115-9.
- Glinkova V, Shevah O, Boaz M, Levine A, Shirin H. Hepatic haemangiomas: Possible association with female sex hormones. *Gut* 2004;53:1352-5.
- Etemadi A, Golozar A, Ghassabian A, Zarei M, Hashemi Taheri AP, Dawsey SM, *et al.* Cavernous hemangioma of the liver: Factors affecting disease progression in general hepatology practice. *Eur J Gastroenterol Hepatol* 2011;23:354-8.
- Yoon SS, Charny CK, Fong Y, Jarnagin WR, Schwartz LH, Blumgart LH, *et al.* Diagnosis, management, and outcomes of 115 patients with hepatic hemangioma. *J Am Coll Surg* 2003;197:392-402.
- Terriff BA, Gibney RG, Scudamore CH. Fatality from fine-needle aspiration biopsy of a hepatic hemangioma. *AJR Am J Roentgenol* 1990;154:203-4.
- Goshima S, Kanematsu M, Kondo H, Yokoyama R, Kajita K, Tsuge Y, *et al.* Hepatic hemangioma: Correlation of enhancement types with diffusion-weighted MR findings and apparent diffusion coefficients. *Eur J Radiol* 2009;70:325-30.
- Brancatelli G, Federle MP, Blachar A, Grazioli L. Hemangioma in the cirrhotic liver: Diagnosis and natural history. *Radiology* 2001;219:69-74.