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Experience in surgical treatment of symptomatic hepatic hemangiomas

Semptomatik hepatik hemanjiomlarda cerrahi tedavi deneyimi

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Abstract

Aim: Hemangioma is the most common benign tumor of the liver. They are rarely large, symptomatic, and show atypical imaging patterns. Surgical treatment indications are persistent symptoms, rapid size increase, life-threatening complications, and diagnostic uncertainty. In this study, we aimed to present the results of our patients who underwent surgical treatment for persistent symptomatic hepatic hemangiomas regardless of size.

Methods: We retrospectively evaluated the clinicodemographics, perioperative findings, and postoperative results of ten patients that we operated for symptomatic hepatic hemangiomas between 2017 and 2021. We made the diagnosis based on ultrasonography, computed tomography, and magnetic resonance imaging. Patients were evaluated in terms of age, gender, symptoms, tumor size and location, perioperative blood transfusion, operation time, postoperative complications, length of stay, and follow-up results.

Results: The median age was 51 (25-60) and all of them were female. Although the persistent symptom in all patients was abdominal pain, we also had patients with additional symptoms such as dyspepsia and nausea. We performed enucleation in two, left lateral segmentectomy in one, right hepatectomy in two patients and, non-anatomical segmental resection in the rest. Perioperative blood transfusion was median 1 (0-3) unit and required in seven. The median operation time was 170 (135-230) minutes, and the median postoperative stay was 8.5 (4-13) days. No serious complications developed in the postoperative period. The median follow-up time was 23.5 (9-40) months and, there was no recurrence or notable long-term complications.

Conclusion: Surgical treatment can be performed safely and effectively in experienced centers for patients with symptomatic hepatic hemangioma.

Keywords: Hepatic hemangioma, liver resection, enucleation.

Öz

Amaç: Hemanjiom, karaciğerin en sık görülen benign tümörüdür. Nadiren büyük, semptomatik ve atipik görüntüleme paterninde olabilirler. Cerrahi tedavi endikasyonları, persistan semptomlar, hızlı boyut artışı, yaşamı tehdit eden komplikasyonlar ve tanısal belirsizliktir. Bu çalışmada boyuttan bağımsız olarak persistan semptomatik karaciğer hemanjiomları nedeniyle cerrahi tedavi uygulanan hastalarımızın sonuçlarını sunmayı amaçladık.

Yöntemler: 2017-2021 yılları arasında semptomatik hepatik hemanjiyom nedeniyle opere ettiğimiz 10 hastanın klinikodemografik verilerini, perioperatif bulgularını ve postoperatif sonuçlarını retrospektif olarak değerlendirdik. Tanıyı ultrasonografi, bilgisayarlı tomografi ve manyetik rezonans görüntüleme ile koyduk. Hastalar yaş, cinsiyet, semptomlar, tümör boyutu ve yerleşimi, perioperatif kan transfüzyonu, operasyon süresi, postoperatif komplikasyonlar, hastanede kalış süresi ve takip sonuçları açısından değerlendirildi.

Bulgular: Hastaların ortanca yaşı 51 yıl (25-60) idi ve hepsi kadındı. Hastaların tamamında persistan semptom karın ağrısı olmakla birlikte, dispepsi ve bulantı gibi ek semptomu olan hastalarımız da mevcuttu. İki hastada enükleasyon, birinde sol lateral segmentektomi, iki hastada sağ hepatektomi ve diğerlerinde anatomik olmayan segmenter rezeksiyon yaptık. Perioperatif kan transfüzyonu medyan 1 (0-3) ünite idi ve yedi hastada transfüzyon ihtiyacı oldu. Ortalama ameliyat süresi 170 (135-230) dakika ve ameliyat sonrası ortalama hastanede kalış süresi 8,5 (4-13) gündü. Postoperatif dönemde ciddi bir komplikasyon gelişmedi. Medyan takip süresi 23,5 (9-40) aydı ve, nüks veya ciddi uzun dönem komplikasyon olmadı.

Sonuç: Semptomatik hepatik hemanjiyomlu hastalarda cerrahi tedavi, deneyimli merkezlerde güvenli ve etkin bir şekilde uygulanabilir.

Anahtar Kelimeler: Hepatik hemanjiom, karaciğer rezeksiyonu, enükleasyon.

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Introduction

Hepatic hemangiomas are the most common benign hepatic tumors with 1 to 20 % [1]. The incidence of hepatic hemangioma is highest in the third to fifth decade of life and is more common in women. Hemangiomas are classified as small (<4 cm), giant (>4 cm), and hypergiant (>10 cm) [2]. Although they are often solitary focal lesions, approximately 40 % of patients have multiple hemangiomas [3]. In most cases, hepatic hemangiomas are small, asymptomatic, and suitable for follow-up conservatively, but rarely, they may become symptomatic including persistent abdominal pain, especially due to capsular tension of the liver despite the use of analgesics. Persistent abdominal pain is the most often surgical treatment indication in the literature [3]. This study aimed to present the perioperative findings and postoperative results of the patients who underwent surgery for symptomatic hepatic hemangiomas in our center.

Material and methods

The present study was approved by local ethical committee (2021/461). Ten cases of symptomatic hepatic hemangiomas were reviewed from 2017 to 2021. We made the diagnosis based on ultrasonography (USG) and computed tomography (CT). We performed magnetic resonance imaging (MRI) in two cases because CT findings did not provide sufficient data for the diagnosis. The informed consent was taken from all study group after the surgery decision. None of the cohort had interventional treatments before the surgery. Patients were evaluated in terms of age, gender, American Society of Anesthesiologists (ASA) score, symptoms, tumor size and location, perioperative blood transfusion, operation time, length of stay, and follow-up time. Indication for surgery was persistent abdominal pain in all. The patients underwent surgery in the supine position after urinary and central venous catheterization. We performed open surgery with Makuuchi incision in 7 cases and right subcostal incision in the rest. The type of liver resection was based on the size and location of the hemangioma. Liver resection or enucleation techniques were performed by using CUSA (Cavitron Ultrasonic Surgical Aspirator System), Aquamantys bipolar electrosurgical device, and wet bipolar forceps. We performed abdominal drains in all cohort. The drains were removed when their outputs decreased below 50 ml per day and all of the patients were discharged uneventfully after their drains removed. We followed the cases after discharge in the first, third and sixth months, and then annually. Statistical analyses were performed using SPSS software (version 21.0, IBM, Armonk, NY, USA). Data not showing normal distribution were reported as median (range).

Results

Age, gender, symptoms, and performed surgery type of the patients are summarized in Table 1. The median age was 51 (25-60), and all study group were female. Three cases were ASA 2 status and the rest were ASA 1. The median size of hemangiomas was 9.5 (6-15) cm. The most seen symptoms were abdominal pain and dyspepsia. In one of the cases, the mass was pressing on the stomach (Figure 1). Five cases were giant, and five cases were hypergiant (Figure 2). Most of the lesions were located on the right lobe of the liver (7 in 10). Right hepatectomy was performed in two, left lateral segmentectomy in one, enucleation in two patients, and non-anatomical segmental resections in others. The median operation time was 170 (135-230) minutes, and the median postoperative stay was 8.5 (4-13) days. All of the patients had an uneventful postoperative recovery, and they were asymptomatic at a median follow-up of 23.5 (9-40) months (Table 2). No complications or recurrences were observed in the patients during the follow-up period.

Table 1. Clinicodemographics and performed surgical technique of the patients.

No	Age	M/F	ASA	Symptom	Location of lesion	Size (cm)	Surgical technique
1	34	F	1	Abdominal pain+ dyspepsia	VI-VII	13	Right non-anatomical liver resection
2	43	F	2	Abdominal pain	V-VI-VII-VIII	13	Right hepatectomy
3	42	F	2	Abdominal pain	VII	10	Right non-anatomical liver resection
4	48	F	1	Abdominal pain	II-III-IV	10	Enucleation
5	55	F	1	Abdominal pain+ dyspepsia	V-VIII	7.5	Enucleation
6	54	F	2	Abdominal pain+ dyspepsia	IV	5.5	Right non-anatomical liver resection
7	54	F	1	Abdominal pain+ dyspepsia	VII-VIII	7	Right non-anatomical liver resection
8	25	F	1	Abdominal pain	VII	15	Right hepatectomy
9	60	F	1	Abdominal pain+ dyspepsia	VI	6	Right non-anatomical liver resection
10	54	F	1	Abdominal pain+ vomiting	II-III	9	Left lateral segmentectomy

M: male, F: female, ASA: Americal Society of Anesthesiologists.

Figure 1. Computed tomography image of the case which hemangioma was pressing on the stomach.

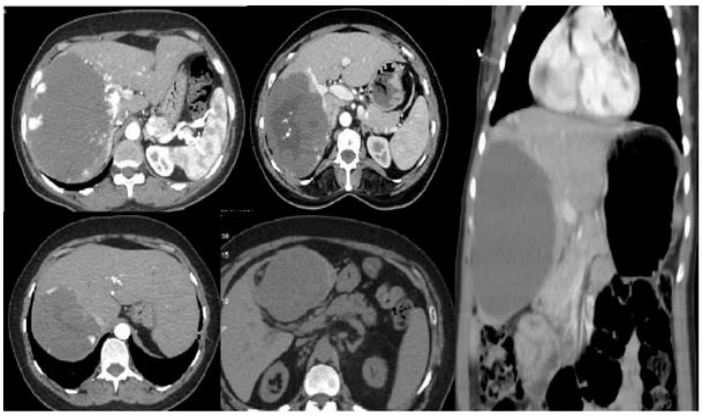

Figure 2. Computed tomography images of our five hypergiant cases.

Table 2. Perioperative findings and postoperative results of the patients.

No	Perioperative blood transfusion (units)	Operation time (minutes)	Postoperative stay (days)	Follow-up time (months)
1	3	150	9	10
2	3	180	7	12
3	2	160	8	9
4	0	230	9	18
5	0	225	13	40
6	2	155	10	30
7	0	215	9	25
8	1	218	7	28
9	1	150	8	22
10	1	135	4	25

Discussion

In this study, we presented the results of our patients who underwent surgical treatment for persistent symptomatic hepatic hemangiomas. There were no serious complications in the postoperative period and, no symptoms, complications or recurrences were observed in the long-term follow-up.

Although they are usually asymptomatic and managed conservatively, hepatic hemangiomas may cause abdominal pain due to capsular distension, rarely [4]. Also, infarction and hemorrhage can cause pain too. Especially patients with giant or hypergiant hemangiomas are more likely to be symptomatic. However, the size is not the only reason for symptoms. While giant hemangiomas are related with abdominal pain more frequently, small hemangiomas may cause pain, too [3]. Like five of our cohort, small hemangiomas may cause abdominal pain, too. On the other hand, because of the localization, these lesions can press to other organs and cause symptoms due to compression, as one of our cohort presented with gastric outlet obstruction.

Because of their asymptomatic nature, hepatic hemangiomas are generally detected incidentally in radiological imaging procedures for other diseases. In clinical practice, USG, CT, and MRI are used for diagnosis. While all these methods have high sensitivity, MRI is the most reliable imaging with the characteristic 'right bulb' sign, and it is the gold standard non-invasive method for some authors [3, 4]. In 8 of our study group, we used USG and BT, but in two, we used MRI for diagnosis due to unclear definition of the imaging.

The surgical resection is the only curative treatment for hepatic hemangiomas and its indications are persistent symptoms, diagnostic uncertainty, enlargement, and rare complications of the lesion as compression to other organs, hemorrhage, rupture, or infarction [3-6]. There was not any rupture or infarction in our study group. While some authors recommend surgical treatment for the risk of rupture, especially in large hemangiomas [7-8] or high-risk lifestyle for hepatic trauma [9], these indications are controversial, and the general approach is conservative treatment in the literature [3, 5, 10].

The ideal surgical technique for hepatic hemangioma is debated. Although enucleation seems to be more beneficial, especially to avoid unnecessary removal of healthy parenchyma, resection may be a safer technique, especially in cases where the diagnosis is unclear. The most critical handicap for enucleation is that major perioperative bleeding can sometimes occur due to the lack of clear cleavage between hemangioma and liver parenchyma [3]. Singh et al. [11] showed that enucleation provides less bleeding, shorter operation time, fewer postoperative complications, and shorter hospital stay than resection. Similarly, studies that find better results of enucleation are in predominant in the literature [12-15]. Since enucleation may cause significant perioperative blood loss in large lesions, it may be more appropriate to prefer formal resections in experienced centers in this group [4]. Because of the benign nature of the tumor and its technical advantages, we recommend enucleation, if possible, for symptomatic hepatic hemangiomas.

We did not encounter any postoperative complications and mortality in our patients, similar to Hermann et al. [3] in terms of surgical treatment results. Conversely, surgical treatment has complications that can be serious for such a benign disease. Perioperative bleeding, postoperative biliary fistula or intra-abdominal abscess are some of these complications [3]. There are many studies reporting excellent surgical treatment results in the literature [12, 16 17]. However, on the contrary, unacceptable mortality rates of up to 2.4 % were observed in some studies prove that surgical treatment should be performed in experienced centers [9]. High surgical experience also minimizes the perioperative bleeding which is the biggest fear for surgeons. As a specialized center for hepatobiliary surgery and liver transplantation, we benefited from our current surgical experience in this patient group and all of the patients were discharged uneventfully.

Robotic and laparoscopic hepatic resections are associated with less intraoperative blood loss, better postoperative recovery, and lower pain scores in the literature [18]. They are alternative options to open surgery and can be performed in technically sufficient centers. Additionally, to minimally invasive surgery, interventional methods such as transarterial embolization and radiofrequency ablation are also effective in treatment of hepatic hemangiomas [19-21] and they may be alternative treatment modalities to surgery in the future. We think that, because hepatic hemangiomas are mostly seen in young women, using these minimally invasive surgical and interventional techniques may be a better option, especially for cosmetic expectancy.

The limitations of our study were the small number of patients and its retrospective nature.

For patients with persistent symptomatic hepatic hemangioma, surgical treatment can be performed safely and effectively in experienced centers. Enucleation may be a better technical choice from hepatic resection in selected patients.

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