

Enlarged liver hemangioma surgical intervention, Review

Ahmed Awad H Shamlan, Hesham Mohammed Almuwallad, Talal Husein T Sulimani, Thamer Hassan R Aiyami, Mahmoud abdulghafur sait, Mohammed yousef alhujuri, Mohammed khder H Sharif

Abstract:

Treatment options for giant hemangiomas are observation, surgical resection, and transcatheter arterial embolization. The aim of this study was to discuss about surgical interventions in depth. We performed detailed search through electronic databases; PubMed, and EMBASE, for studies published in English language and human subjects thought instant to 2017. Studies discussing the managing enlarged liver hemangioma by surgical intervention. While most people with HH show no sign or symptom, and most HH are non-progressing and do not need therapy, there is a small number of cases with rapid volumetric development or difficulties, which trigger for suitable treatment. The results of clinical and laboratory investigations to date, mainly for imaging techniques, have shown that for small HH, regular follow-up is sufficient. For cavernous HH, the development is uncertain and often unfavorable, with severe complications needing particular surgical expertise in difficult situations. Hepatic hemangiomas require a careful diagnosis to differentiate from other focal hepatic lesions, co-occurring diagnoses are also possible. Surgical resection is the treatment option for symptom relief of complicated hemangiomas or lesions where the diagnosis is unclear. Both enucleation and liver resection offer curative therapy; enucleation is favored since of greater preservation of liver parenchyma and fewer complications.

Introduction:

Hemangiomas are the most common benign hepatic tumor, and the occurrence ranged from 3-20% in autopsy series [1], [2]. The wide use abdominal ultrasonography and computed tomography (CT) for various signs has enhanced the diagnostic rate of hepatic hemangiomas. The etiology of hepatic hemangiomas is not entirely understood. They normally originate from the spreading of vascular endothelial cells, and expand by ectasia as opposed to hyperplasia. They are well-circumscribed tumors with a clear coarse sheath that separates them from the hepatic parenchyma, [3] and their blood supply originates from the hepatic artery. No deadly modifications have been reported in hepatic hemangiomas in long-lasting follow-up [4]. Numerous diagnostic methods are used for hepatic hemangiomas. Sonography is usually utilized to evaluate liver nodules and a hepatic hemangioma provides as a well-defined, lobulated, homogenous hyperechoic mass. In some cases there is a hypoechoic portion due to the fact that of hemorrhage, fibrosis, or calcification. For therapy, multiphase CT has been utilized to show outer nodular or globular enhancement and normal centripetally progressive enhancement. Magnetic resonance imaging is made use of to define the anatomical relationship of liver Glissonian pedicles and hemangiomas. The occurrence of hemangiomas is highest possible in the 3rd to 5th years of life, and they are more typical in women [5]. The growth of hemangiomas may be associated with hormone levels, and exposure to high levels of estrogen and progesterone, such as accompanies multiparity, maternity, and oral contraceptive pill use, might be the reason the problem is a lot more usual in women. However, the pathogenesis of hepatic hemangiomas is still controversial.

Treatment options for giant hemangiomas are observation, surgical resection, and transcatheter arterial embolization. The aim of this study was to discuss about surgical interventions in depth.

Methodology:

We performed detailed search through electronic databases; PubMed, and EMBASE, for studies published in English language and human subjects thought instant to 2017. Studies discussing the managing enlarged liver hemangioma by surgical intervention, were included whether were reviews or control studies. following keywords are used in search process: “liver hemangioma”, “complications”, “treatment”, “surgery”, “Management”. We excluded case reports. Moreover, references of included studies were scanned for more relevant articles.

Discussion:

• **Symptoms**

In a lot of scenarios, HH do not reveal any indicators and/or symptoms, most likely being found incidentally throughout imaging examinations for various other unconnected problems. If signs and symptoms do take place, they are nonspecific, typical to many other illness, especially of digestive origin. Pain in the best upper hemiabdomen is the most usual complaint; others consist of decreased hunger, premature satiation experience, nausea, vomiting, abdominal pain: sense of volume, postprandial bloating, very early or late. These signs could suggest the presence of a hemangioma or can be triggered by various other disorders independent of the presence of HH [6]. Physical examination could spot hepatomegaly and really hardly ever an apparent mass. HH show difficulties relying on dimension and area: inflammatory, acute (high temperature) and chronic; mechanical: rupture, spontaneous or traumatic: intra-abdominal mass disturbance

trauma, or marginal trauma when situated in the proximity of the costal margin, hence more exposed to trauma, compression of surrounding frameworks: stomach, causing gastric obstruction (very early sensation of fullness), bile ducts, bring about jaundice, haemobilia, volvulus/ torsion/ infarction for pedunculated HH; bleeding: intratumoral or intraperitoneal, with or without consumptive coagulopathy: Kassalbach-Merritt disorder (HH giant, thrombocytopenia, intravascular coagulation), Osler-Rendu-Weber disease (hereditary telangiectasia: several smaller HA on face, tongue, jugal mucosa, gastrointestinal tract, liver), Klippel-Trenaunay syndrome (congenital hemiatrophy mole flammeus, hemi-mega-encephalopathy), Von Hippel-Lindau disease (cerebral, retinal, pancreatic hemangioma); degenerative: apoplexy, hyalinization, dynamic fibrosis and sclerosis becoming central mark. Specific situations of HH: pedunculated, calcified, on liver steatosis, on cirrhotic liver, with massive arteriovenous shunt, made complex with heart failing. Co-pathologies related to hepatic hemangioma include: most regularly hemangiomatosis, focal nodular hyperplasia, and angiosarcoma.

Inclining factors of issues of HH: adulthood, chronic medicine usage (such as steroid usage, can speed up the growth of an existing HH), women sex: estrogen treatment, usage of oral contraceptive pills (enhance the threat or boost the size, discontinuing contraceptive program could result in lesion regression, yet not always); pregnancy and multiparity (by interrupting estrogen and progesterone hormone levels, leading to a boost in size of a preexisting HH); substitute treatment for menopausal signs and symptoms; ovarian stimulation treatment with clomiphene citrate and human chorionic gonadotropin. Hereditary genetics penetrance or sex hormone proliferative variables might likewise be a description.

Physical test does not featured notable modifications, as do not routine laboratory examinations, including liver chemistry [7].Hypofibrinogenemia takes place because of intratumoral

fibrinolysis, while thrombocytopenia is linked with large sores, issuing of spleen sequestration and devastation. Tumor markers: alpha-fetoprotein (AFP), CA 19-9 (cancer causing antigen 19-9) and carcinogenic embryonic antigen (CEA) within typical restrictions promote for the benign nature of the lesion.

- **Diagnosis**

HH is generally diagnosed incidentally on imaging research studies done as regular evaluations or for other factors than the analysis of a possible liver mass. Less than half of HH present with obvious medical symptoms, containing upper abdominal pain, sensation of weight or volume (this is generally the case for big lesions, which trigger the distension of Glisson's capsule) [8].

Imaging diagnosis of HH includes conventional ultrasound (US, B-mode and Doppler), contrast-enhanced ultrasound (CEUS), contrast-enhanced computed tomography (CT), magnetic resonance imaging (MRI), angiography and nuclear scans (scintigraphic studies with Technetium-99m classified red blood cells), supplying great specificity for the diagnosis of HH. These are made use of in order to separate HH from other vascular tumors, benign lesions (adenoma) or deadly ones (HCC, metastasis, dysplastic nodules).

Ultrasound (US)

As a result of its wide schedule, lack of irradiation and reproducibility, ultrasound is usually the first diagnostic action for HH. The main limitation of US is that it is very operator and patient-dependent. On standard ultrasound, HH shows up as a hyperechoic homogenous nodule, with distinct margins and posterior acoustic improvement [9]. Furthermore, on follow-up tests or while contrasting the current scan with the previous ones, HH generally does not transform in

dimension [10].The hyperechoic pattern on US is clarified by the histology of HH-- the hyperechogenicity is an outcome of the various user interfaces between the endothelial lined sinuses making up the HH and the blood within them. This hyperechoic look is normally the situation for tiny HH; bigger lesions, due to feasible death, hemorrhage or fibrosis can appear inhomogeneous, with blended echogenicity (hypo- and hyperechoic). Sores that have such resemble patterns are identified as atypical HH. On Doppler US, most HH show very little or no Doppler signal [11].

Nonetheless, not every hyperechoic mass needs to be classified as HH. This resemble pattern could additionally be seen with various other benign (adenomas) or deadly pathology (hepatocellular carcinoma, metastasis). As gone over, steady searchings for on serial examinations are a very reputable indication in clinical technique for benign disease. US has a good accuracy in distinguishing HH from malignant hyperechoic masses (sensitivity of 94.1% and uniqueness of 80.0% for sores under 3 cm size). The absence of sore blood circulation in HH on Doppler US is likewise a reliable sign for the differential medical diagnosis with hepatocellular cancer (HCC), which regularly has intra- or peritumoral vascularity [12].In hypoechoic lesions, a peripheral echogenic edge could suggest HH. In contrast, a peripheral perilesional hypoechoic rim, called the "target indication", is hardly ever seen in HH [11].One more differential diagnosis to be considered is focal nodular hyperplasia (FNH), which has the characteristic "spoke-wheel indicator" [13].Care should be remembered when examining the fatty liver, in which a common hemangioma can appear hypoechoic about the intense hyperechoic liver parenchyma.

Contrast-enhanced ultrasound (CEUS)

CEUS is a good tool for a more specific medical diagnosis of HH than conventional US. Using microbubbles that much better define the microvasculature, CEUS generates real-time perfusion imaging within the lesion much like the vascularity pattern seen in CT scans. This is particularly useful for the differential diagnosis of a liver nodule, having the ability to precisely discriminate a HH from adenomas, FNH, HCC or metastasis. The regular HH reveals peripheral nodular improvement in the arterial phase with complete (but often incomplete) centripetal filling in the portal venous and late phases [14]. This particular enhancement pattern has a sensitivity of 98% for histologically verified HH [14]. Besides this common look, one need to know that a HH could hardly ever have a centrifugal improvement [15], [16].

The common HH appears on CT scans as a hypodense, well-defined lesion, which after comparison injection reveals peripheral nodular enhancement with progressive centripetal homogeneous filling. This specific pattern can not be highlighted in really small sores of much less than 5 mm, which can be difficult to characterize. Just like CEUS, atypical HH can reveal various enhancement patterns on CT [17], [18]. Non-enhancing intralesional spots could accompany fibrosis, thrombosis or necrosis, resulting in a heterogeneous presentation. HH that are identical and quickly enhancing in the arterial stage could be misinterpreted for hypervascular tumors. In patients with serious fatty infiltration of the liver, HH can show up hyperdense about the nearby liver parenchyma. The primary constraints of the CT are radiation and using iodine contrast media (which can trigger contrast-induced nephropathy).

- **Treatment**

The majority of HH are little and asymptomatic at the time of diagnosis and the evolution is reasonably fixed. There is no data in literary works to promote for malignant change. A management by guidance through imaging methods at every 6 months or yearly in order to assess

the range of the development in time is considered adequate. Long-time monitoring is required in patients that have new-onset discomfort or are unresponsive to analgesics, that are obtaining estrogen therapy, throughout pregnancy and required for big HH. Inning accordance with existing information, there is no recognized medicinal therapy able to decrease the dimension of HH. Anti-angiogenic therapy with bevacizumab (a monoclonal antibody capable of preventing endothelial development element task) was considered, without verification.

Signs for surgery are quick growth in size, pain in spite of anesthetics or both. Nowadays, the following are reevaluated as outright signs for surgery: measurements, localization or threat of intratumoral thrombosis, rupture or various other complications.

In addition to surgical techniques, there are various other choices offered to treat symptomatic HH, such as arterial embolization or radiofrequency ablation.

Surgical management consists of segmental resections, lobectomy or enucleation of the hemangioma, by open surgery or laparoscopy [7].

Surgery

Gigantic hemangiomas are generally asymptomatic. Surgical treatment is taken into consideration when the sore grow or signs take place. Operative management for hepatic hemangiomas must thoroughly take into consideration the approximated threat of medical complications [19]. In this study, we tried to identify possible danger factors for issues, and examined the management of serious complications. Rupture of a hemangioma is an uncommon issue that could result in fatality without treatment. Transcatheter arterial embolization (TAE) is just one of the therapy alternatives; nevertheless, there are just a few situation records of successful treatment of burst hemangiomas with TAE [21]. In our series, just two patients got angiographic embolization. The

initial patient had spontaneous hemoperitonium exposed by CT scan. An angiogram revealed no active blood loss and the patient was steady hemodynamically. She received a hepatic resection and no postoperative complications happened. The 2nd patient had a 14.5 centimeters hemangioma at the hepatic hilum with intratumoral blood loss and provided with obstructive jaundice. Therapy with TAE stopped working to support the patient hemodynamically, and an extended left lobectomy was done. Her postoperative training course was complicated by an injury infection that was handled with regional wound care. Management of complications is a problem due to the fact that a hemangioma is a stable problem and patients have a great top quality of life. In our collection, grade I and grade II difficulties were taken care of cautiously [20]. Intrusive procedures including ERCP and PTCD were looked for grade III complications.

A literature review of the surgical management of hepatic hemangiomas exists in Table 1. Many studies report a difference in results in between enucleation and resection [22]. Our early research offered by Tsai et al revealed reliable indicators for surgery for hemangioma [23]. Thirteen of 40 patients with residual tumor showed marginal development. The tumors varied from 2 to 10 cm. In the existing research study we concentrated on huge tumors due to the fact that they carry high risks in operations and surgical management. The surgical methods have not varied in the previous 2 decades, and this research study showed there is no significant difference in issues. Taking care of problems in liver surgery is the key issue to a great clinical outcome because surgical treatment still carries some dangers.

Surgical treatment is suggested for giant hepatic hemangiomas with signs or hepatic lesions with an unsure medical diagnosis. Resection and enucleation were both reasonably safe with an appropriate complication rate (13.1%) in our series and there was no death. In addition, bile leakage and pleural effusion were one of the most typical significant issues. The rate of bile

leakage after hepatic resection has been reported to be 6-11%, and the majority of patients recover with traditional treatment [24]. Endoscopic treatment such as ERCP, with or without sphincterotomy, or biliary stenting, provides one more approach for the management of surgical complications, and returns excellent outcomes [25]. While screening for bile leakage during hepatic resection has been advised, a randomized test recommended this procedure provides no benefits [26].

Table 1. Literature Review of Surgical Management and Complications of Hepatic Hemangiomas

Author	Number of patients	Number (%) of complications	Aim of study	Special remarks
Schwartz, et al.[30]	16	3 (18.8)	Review of the literature and single center experience	Mortality rate near 0% in all series Two subphrenic abscesses and one postoperative bleeding
Brouwers et al.[22]	24	5 (20.8)	Review the results of surgical treatment	Complications included bile leakage (2), pneumonia (1), wound dehiscence (1), upper gastrointestinal bleeding (1), and seroma (1) No progression of residual hemangioma during follow-up
Tsai et al.[23]	43	4 (9.3)	Symptomatic group vs. and suspicious	Resection for patients with symptoms diagnosis questionable diagnosis, including small and giant hemangioma One case of bile leakage required reoperation
Lerner et al.[28]	52	14 (26.9)	Enucleation vs. resection	Enucleation preferred technique Bile leakage (2), ileus (3), wound infection (1), angina (1), and fever (1)
Hamaloglu et al.[27]	22	3 (13.6)	Resection vs. enucleation	Enucleation was the choice of therapy Complications included pleural effusion (1), liver abscess (1), and wound infection (1)
Singh et al.[29]	21	5 (23.8)	Compare enucleation and liver resection	Enucleation was safer, quicker, and associated with less morbidity than liver resection

Conclusion:

While most people with HH show no sign or symptom, and most HH are non-progressing and do not need therapy, there is a small number of cases with rapid volumetric development or difficulties, which trigger for suitable treatment. The results of clinical and laboratory investigations to date, mainly for imaging techniques, have shown that for small HH, regular follow-up is sufficient. For cavernous HH, the development is uncertain and often unfavorable, with severe complications needing particular surgical expertise in difficult situations. Hepatic hemangiomas require a careful diagnosis to differentiate from other focal hepatic lesions, co-occurring diagnoses are also possible. Surgical resection is the treatment option for symptom relief of complicated hemangiomas or lesions where the diagnosis is unclear. Both enucleation and liver resection offer curative therapy; enucleation is favored since of greater preservation of liver parenchyma and fewer complications.

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