Pedunculated Focal Nodular Hyperplasia of the Liver

Alexandru Martiniuc^{1,2}, Traian Dumitraşcu^{1,2}

¹“Carol Davila” University of Medicine and Pharmacy, Bucharest, Romania

²Center of General Surgery and Liver Transplant, Fundeni Clinical Institute, Bucharest, Romania

Corresponding author:

Traian Dumitraşcu, MD
“Carol Davila” University of Medicine
and Pharmacy, Center of General
Surgery and Liver Transplant
Fundeni Clinical Institute
Fundeni Street no 258, 022328
Bucharest, Romania
E-mail: traian.dumitrascu@umfd.ro

ABSTRACT

Focal nodular hyperplasia (FNH) is the second most common type of benign liver tumour, and it is more frequently encountered in young women and the right hemi-liver. Most patients are asymptomatic, and there is no malignant potential. Thus, the current guidelines do not recommend any treatment for uncomplicated FNH, and surgery is indicated only for some atypical patients (with complications or uncertain diagnosis). Pedunculated forms are atypical, rare features of FNH and appear to be more frequently associated with complications. We hereby report the case of a 40-year-old woman diagnosed at computed tomography with a lobulated subhepatic FNH with a long pedicle originating from segment III of the liver, which was successfully resected. Pedunculated FNH is associated with a challenging diagnosis and may require resection in order to avert potential complications such as compression of surrounding organs or torsion of the pedicle.

Key words: focal nodular hyperplasia; pedunculated liver tumour; liver resection

INTRODUCTION

Focal nodular hyperplasia (FNH) is the second most common type of benign liver tumour, and it is more frequently encountered in young women and the right hemi-liver (1,2). The prevalence of FNH in the general population, assessed by transabdominal ultrasound, was recently reported to be 0.2% (3).

Most patients with FNH are asymptomatic (2). Furthermore, there is no malignant potential for FNH (2). Thus, the current guidelines of the European Association for the Study of the Liver do not recommend any treatment for FNH, except for particular (atypical) cases such as pain, haemorrhage, expanding or pedunculated/ exophytic FNH or when the diagnosis of hepatocellular adenoma or carcinoma cannot be ruled out (1). It is worth to mention that a recent study has shown that the progressive enlargement of FNH does not appear to be an indication for liver resection (4).

Thus, FNH is an uncommon indication for liver resection, and the number of liver resections for FNH has decreased in recent years (5). Most patients resected for FNH required minor liver resections and the main indications were

Received: 31.12.2017

Accepted: 25.01.2018

Copyright © Celsius Publishing House
www.sgo-iasgo.com

diagnostic uncertainty and tumour-related symptoms (6,7). The Fundeni Clinical Institute experience of 3165 liver resections performed between 2000 and 2016 included only 91 patients with FNH (3.3% of the total number of liver resections)(8).

The imaging methods for diagnosis of FNH include ultrasound (gray-scale, color or power Doppler, contrast-enhanced) and multiphasic computed tomography and magnetic resonance imaging (1,2,9). The five major criteria for FNH are attenuation or signal intensity similar to that of the surrounding liver, homogeneity, strong enhancement without washout at in the arterial phase, the presence of a central scar, and the absence of a capsule (with or without a lobulated aspect) (9). An atypical imaging aspect is widely considered an indication for surgery in FNH (10).

We hereby present the case of a patient with a rare atypical case of FNH – an extrahepatic, pedunculated liver tumour of segment III.

CASE PRESENTATION

A 40-year-old woman with no significant medical history was admitted to our hospital for the evaluation of an asymptomatic inter-hepatic-gastric mass detected incidentally at ultrasound examination during a routine check-up. Routine laboratory tests were within normal limits, including the hepatitis B and C virus tests and CA 19-9, alpha-fetoprotein and carcinoembryonic antigen serum levels. Contrast-enhanced computed tomography revealed a lobulated solitary subhepatic mass, measuring 42 mm x 50 mm, arising from segment III of the liver, with a long pedicle (*fig. 1*).

The patient underwent surgery in March 2016. Intraoperatively a lobulated exophytic tumour mass originating from segment III of the liver with a long pedicle was identified and resected through a mini-laparotomy (*fig. 2*). The postoperative outcome was uneventful, and the patient was discharged on post-operative day 3.

Gross pathology examination of the operative specimen revealed a firm nodular lobulated brown-grey tumour with central scar (*fig. 3*). The pathological finding was compatible with the diagnosis of FNH.

DISCUSSION

Pedunculated liver tumours are very uncommon (10,11) and usually the pedicle remains undetected with imaging techniques (9). The imaging features of pedunculated liver tumours are similar to those of the usual intrahepatic tumours, except for their

Figure 1 - Computed tomography (a) axial plane, arterial phase showing a homogeneous subhepatic lobulated mass (T), on the left side of the gallbladder, with strong contrast enhancement and with hypoattenuating central scar (black open arrow); (b) frontal plane, portal phase showing an isoattenuated subhepatic lobulated mass (T), and the drainage vein of the tumour (white filled arrow), at the level of the pedicle, originating from segment III of the liver; (c) sagittal plane, non-enhanced, showing a homogeneous subhepatic lobulated mass (T) with pedicle (white open arrow) originating from segment III of the liver with an intensity similar to that of the liver

Figure 2 - Intraoperative aspects are showing a pedunculated lobulated tumour with long pedicle (white open arrow), originating from segment III of the liver (SIII) (the white filled arrow marks the round ligament of the liver)

Figure 3 - Gross pathological appearance of the operative specimen showing (a) firm nodular lobulated brown-grey tumour with a pedicle (white filled arrow), (b) central scar (white open arrow), feeding artery (white filled arrow) and drainage vein of the tumour (black filled arrow)

location (11). In our patient, the pedicle was identified at computed tomography, and there were typical imaging features of FNH except for the extrahepatic location.

Exophytic patterns of liver tumours were previously described for liver haemangioma (12), adenoma (13), focal nodular hyperplasia (10,14,15), angiomyolipoma (16), solitary fibrous tumour (17), hepatocellular carcinoma (18), cholangiocarcinoma (19) and metastases (20).

Pedunculated forms were reported in approximately 9% of patients diagnosed with FNH (9) and appeared to be more frequently associated with haemorrhagic complications (2).

The diagnosis of a pedunculated FNH is challenging because they can be misdiagnosed as other intra-abdominal tumours, such as Extra-gastrointestinal Stromal Tumours (14).

Thus, most patients will require resection for a precise diagnosis and to prevent particular complications such as torsion of the pedicle or compression of the surrounding organs.

CONCLUSION

FNH is a benign liver tumour that usually does not require surgery. For the rare forms of pedunculated FNH, the diagnosis is challenging and may require resection for the uncertainty of diagnosis and potential complications, such as compression of surrounding organs or torsion of the pedicle.

REFERENCES

1. EASL Clinical Practice Guidelines on the management of benign liver tumours. *J Hepatol* 2016;65(2):386-98.
2. Nahm CB, Ng K, Lockie P, Samra JS, Hugh TJ. Focal nodular hyperplasia-a review of myths and truths. *J Gastrointest Surg*. 2011; 15(12):2275-83. doi: 10.1007/s11605-011-1680-x.
3. Kaltenbach TE, Engler P, Kratzer W, Oeztuerk S, Seufferlein T, Haenle MM, et al. Prevalence of benign focal liver lesions: ultrasound investigation of 45,319 hospital patients. *Abdom Radiol (NY)* 2016; 41(1):25-32.
4. Broker MEE, Klompenhouwer AJ, Gaspersz MP, Alleleyn AME, Dwarkasing RS, Pieters IC, et al. Growth of Focal Nodular Hyperplasia is Not a Reason for Surgical Intervention, but Patients Should be Referred to a Tertiary Referral Centre. *World J Surg* 2017 Nov 22. doi: 10.1007/s00268-017-4335-6. [Epub ahead of print]
5. Hau HM, Atanasov G, Tautenhahn HM, Ascherl R, Wiltberger G, Schoenberg MB, et al. The value of liver resection for focal nodular hyperplasia: resection yes or no? *Eur J Med Res* 2015;20:86.
6. Navarro AP, Gomez D, Lamb CM, Brooks A, Cameron IC. Focal nodular hyperplasia: a review of current indications for and outcomes of hepatic resection. *HPB (Oxford)* 2014;16(6):503-11.
7. Perrakis A, Vassos N, Grutzmann R, Croner RS. What is Changing in Indications and Treatment of Focal Nodular Hyperplasia of the Liver. Is There Any Place for Surgery? *Ann Hepatol* 2017;16(3):333-41.
8. Botea F, Ionescu M, Brasoveanu V, Hrehoret D, Alexandrescu S, Grigorie M, et al. Liver Resections in a High-Volume Center: Form Standard Procedures to Extreme Surgery and Ultrasound-guided Resections. *Chirurgia (Bucur)* 2017;112(3):259-77.
9. Dioguardi BM, Ronot M, Salvaggio G, Vilgrain V, Brancatelli G. Imaging of Hepatic Focal Nodular Hyperplasia: Pictorial Review and Diagnostic Strategy. *Semin Ultrasound CT MR* 2016;37(6):511-24.
10. Badea R, Meszaros M, Al HN, Rusu I, Chiorean L. Benign nodular hyperplasia of the liver-pedunculated form: diagnostic contributions of ultrasonography and consideration of exophytic liver tumors. *J Med Ultrason (2001)* 2015;42(1):97-102.
11. Kim HJ, Lee DH, Lim JW, Ko YT, Kim KW. Exophytic benign and malignant hepatic tumors: CT imaging features. *Korean J Radiol* 2008;9(1):67-75.
12. Zhang X, Zhou Z. Hepatic hemangioma masquerading as a tumor

- originating from the stomach. *Oncol Lett* 2015;9(3):1406-8.
13. Portinari M, Liboni A, Feo CV. Strangulated adenoma of the liver: a unique cause of acute abdomen. *Ann Ital Chir* 2014;85(ePub). pii: S2239253X14022439
14. Reddy K, Hooper K, Frost A, Hebert-Magee S, Bell W, Porterfield JR, et al. Pedunculated focal nodular hyperplasia masquerading as perigastric mass identified by EUS-FNA. *Gastrointest Endosc* 2015; 81(1):238-9.
15. Wasif N, Sasu S, Conway WC, Bilchik A. Focal nodular hyperplasia: report of an unusual case and review of the literature. *Am Surg* 2008;74(11):1100-3.
16. Akatsu T, Sakamoto M, Shimazu M, Kitajima M. Pedunculated angiomyolipoma of the liver with a predominant pelioid pattern. *Virchows Arch* 2004;444(5):467-9.
17. Park HS, Kim YK, Cho BH, Moon WS. Pedunculated hepatic mass. *Liver Int* 2011;31(4):541.
18. Yeh CN, Lee WC, Jeng LB, Chen MF. Pedunculated hepatocellular carcinoma: clinicopathologic study of 18 surgically resected cases. *World J Surg* 2002;26(9):1133-8.
19. Noh SJ, Lee HK, Yu HC, Moon WS. Exophytic combined hepatocellular carcinoma and cholangiocarcinoma. *Clin Mol Hepatol* 2012; 18(4):416-9.
20. Nagata H, Hayashi K, Mike M. An exophytic hepatic metastasis of mucinous colon cancer. *Jpn J Clin Oncol* 2015;45(6):605-6.