

# World Journal of *Clinical Cases*

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## Large focal nodular hyperplasia is unresponsive to arterial embolization: A case report

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### Abstract

#### BACKGROUND

Focal nodular hyperplasia (FNH) commonly occurs in women; it is usually asymptomatic and sometimes difficult to differentiate from hepatocellular carcinoma (HCC).

#### CASE SUMMARY

A large space-occupying lesion in the right lobe of the liver was incidentally detected in an adult man and diagnosed as HCC. Transcatheter arterial chemoembolization was applied once monthly for 2 years, but the lesion did not decrease in size. It was revealed by biopsy to be FNH. Eleven years later, the patient underwent liver resection due to hemorrhage and the pathological examination confirmed FNH.

#### CONCLUSION

For a space-occupying lesion, it is prerequisite to pathologically confirm the diagnosis and the corresponding intervention can be effective.

**Key Words:** Focal nodular hyperplasia; Large focal nodular hyperplasia; Transarterial embolization; Hepatocellular carcinoma; Case report

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**Core Tip:** We report a case of large focal nodular hyperplasia that was pre-emptively diagnosed by a physician as hepatocellular carcinoma. Consequently, the management was incorrect and ineffective, which raises an alert for all clinicians.

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## INTRODUCTION

Focal nodular hyperplasia (FNH) is defined by proliferating hepatocytes reconstituting 1–2-cell-thick plates with a multinodular pattern separated by stellate central fibrous scar surrounded with a dystrophic arteriole[1]. It is the second most frequent benign liver nodule after hemangioma and it has been reported to occur in about 3% of the general population and in women in their 30s and 40s. Its accurate etiology remains unknown. These lesions are usually asymptomatic and detected serendipitously on imaging examination, autopsy or surgery for unrelated symptoms[2,3]. Clinical recognition of FNH and FNH-like lesions is important for their management because they are sometimes difficult to differentiate from hepatic adenoma and hepatocellular carcinoma (HCC) with radiology or ultrasound, and FNH itself is not a premalignant disease[4]. In our case, FNH was present as a large lesion that was misdiagnosed and the patient underwent unwarranted intervention.

## CASE PRESENTATION

### Chief complaints

The patient felt discomfort in the right upper quadrant of the abdomen and received physical examination.

### History of present illness

In 2005, a space-occupying lesion measuring 10.1 cm × 10.0 cm in the right lobe of the liver was detected in a 34-year-old man through multiphase computed tomography (CT) due to discomfort in the right upper quadrant of the abdomen. CT imaging showed multiple cystic low-density lesions heterogeneously enhanced in the arterial phase with delayed portal washout, and splenomegaly, which was confirmed by magnetic resonance imaging (MRI). Liver functions and  $\alpha$ -fetoprotein level were within normal limits; all viral hepatitis and autoimmune biomarker panels were negative and no history of alcohol consumption was noted. HCC was then suspected preferably at the discretion of the first clinician. The patient visited many tertiary care units. Biopsy was denied for fear of tumor seeding along the needle track. Due to unexpected surgery and the large lesion, the patient received transcatheter arterial chemoembolization (TACE) once monthly, recommended by the first clinician, for a total 22 times within 2 years, but the size of the lesion was not changed. In 2008, liver biopsy revealed FNH but did not exclude well-differentiated HCC. Transarterial embolization is a feasible treatment strategy for FNH, which was unresponsive in this patient. In 2016, hepatectomy was performed due to hemorrhage in the lesion. Postoperative pathology determined low-grade FNH with a size of 13.6 cm × 10.5 cm (Figures 1 and 2).

### History of past illness

No special history of past illness was reported.

### Personal and family history

No special personal and family history was reported.

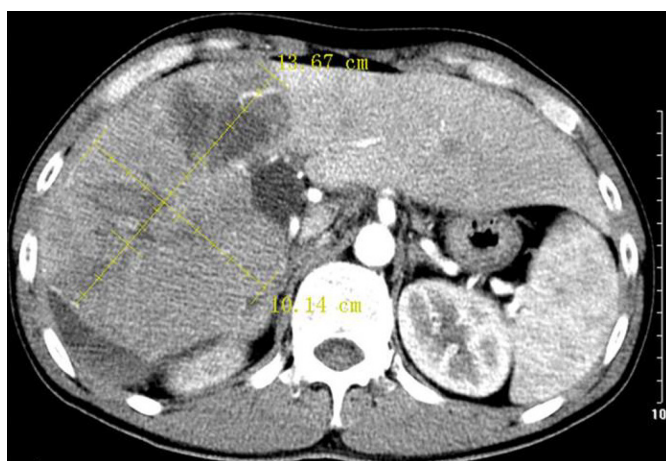
### Physical examination

No finding on physical examination was revealed.

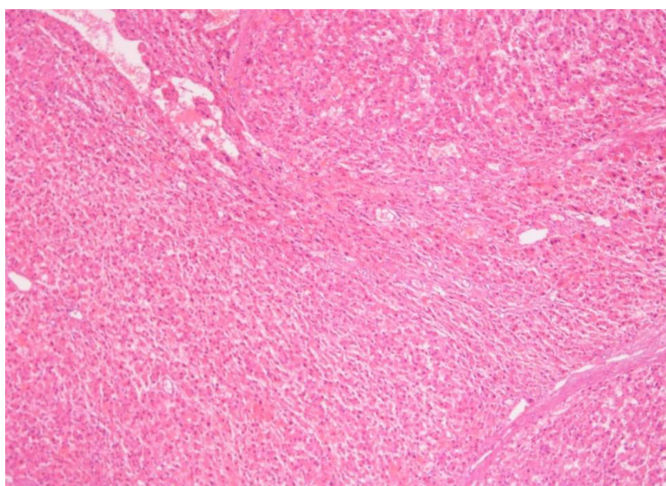
### Laboratory examinations

Liver functions and  $\alpha$ -fetoprotein level were within normal limits, and all viral hepatitis and autoimmune biomarker panels were negative.





**Figure 1 Computed tomography scan.** Large plaque-like lesion heterogeneously enhanced, including multiple cystic low-density lesions in the arterial phase with delayed portal washout, size 13.6 × 10.5 cm.



**Figure 2 Postoperative pathology.** Hepatocytes with uniform size, arranged in clusters, with large dilated vessels and formation of fibrillar septum.

### **Imaging examinations**

CT and MRI showed multiple cystic low-density lesions heterogeneously enhanced in the arterial phase with delayed portal washout and splenomegaly.

### **FINAL DIAGNOSIS**

HCC was diagnosed at the discretion of the first physician, but later FNH was confirmed.

### **TREATMENT**

TACE was applied once monthly, 22 times in total, and 11 years later, the patient underwent hepatectomy.

### **OUTCOME AND FOLLOW-UP**

Currently, the patient has been well for 5 years on regular follow-up. This study was approved by the Ethics Committee of The Fifth Medical Center, Chinese People's Liberation Army General Hospital and informed consent was received for publication

of the case.

## DISCUSSION

FNH is not a rare disease in the general population but its pathophysiology is still elusive[5]. In China, FNH is detected in adult men or children, and is solitary in most cases[2,6]. FNH lesions are generally asymptomatic and are therefore discovered fortuitously during autopsy, or imaging examinations for unrelated symptoms. It progresses insidiously and it is difficult to distinguish precisely between FNH and HCC, even with modern advanced imaging technology, especially for small lesions[7, 8].

On evaluation of a solid hepatic tumor, a benign lesion must be taken into account when serum fetoprotein level is normal and viral hepatitis tests are negative. Final diagnosis of the space-occupying lesion must be made cautiously, and any pre-emptive decision will surely have a negative impact on subsequent management. Although CT or MRI allows accurate diagnosis in most cases, pathological confirmation using fine needle biopsy is a prerequisite for carrying out any aggressive intervention[9,10]. Multidisciplinary teams will collaborate and work well in diagnosis, treatment and care to avoid mismanagement.

Management of FNH is controversial because its etiology and pathophysiology are not fully understood[11]. It has been reported that transarterial embolization, preferably applied as a less-invasive tumor ablation technique, is a good option in the management of a variety of liver lesions since it is a hyperplastic response of the hepatic parenchyma to pre-existing arterial malformations, especially for small FNH [12,13]. When symptoms are continuously present or complications like hemorrhage occur due to the larger lesion or chronic course, the blood supply from the dual systems precludes transarterial embolization or TACE, surgery can be first-line treatment option. FNH itself is a benign disease and it does not require radical treatment unless symptoms persist or complications occur.

## CONCLUSION

Pathologically confirmed diagnosis is prerequisite for space-occupying lesions and results in effective management.

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