

## Introduction

The diagnosis and staging of hepatic fibrosis is extremely important in clinical decision making. The progression from fibrosis to cirrhosis is usually slow but can occur more rapidly in some cases [1-3]. The gold standard method for diagnosis of fibrosis and cirrhosis is liver biopsy; however, liver biopsy is invasive and presents poor patient acceptance, a small risk of complications, and sampling errors. Basic imaging diagnosis of liver cirrhosis is non-invasive and enables early detection of hepatic morphological changes using ultrasonography (US), computed tomography (CT) and magnetic resonance imaging (MRI) [4].

## Morphological features on CT and MRI

- ❖ Morphological features include:
  - Atrophy of right lobe and segment IV (<30 mm)
  - Hypertrophy of the caudate and lateral left lobes
  - Liver surface nodularity:
    - Regenerative nodules (most) are isodense/hyperdense to rest of liver on CT; iso- mildly hyper on T1WI and isointense on T2WI-MRI
    - Siderotic nodules (minority) are hyperdense (accumulation of iron) on CT and hypointense on T2WI-MRI
    - Dysplastic nodules: variable appearance
  - Parenchymal heterogeneity both on the pre and post IV contrast scans
  - Right hepatic posterior notch: sharp notch in the posterior surface of the liver
  - Expanded gallbladder fossa: enlargement of the peri-cholecystic space bounded medially by the left lateral segment and laterally by the right

hepatic lobe, in concurrence with non-visualization of the left medial segment

- Narrow hepatic veins <5 mm: measured close to its confluence with the inferior vena cava
- Enlarged caudate to right lobe ratio (>0.90): the width of the caudate lobe / the width of the right lobe
- Enlargement of the hilar periportal space >10 mm
- Splenomegaly: splenic length ≥ 13 cm
- They present low sensitivity and are not always present at earlier stages of fibrosis. Sensitivity, specificity, accuracy, and positive predictive value of some of these morphologic features of cirrhosis are shown in table 1
- Many are subjective and used with caution when diagnosing or excluding cirrhosis. [1-4].

**Table 1: Morphological features of cirrhosis [1]**

Feature	Sensitivity	Specificity	Accuracy	PPV
<b>Surface Nodularity</b>	<b>91.8%</b>	<b>84.3%</b>	<b>88.0%</b>	
<b>Right Posterior "Notch"</b>	<b>72%</b>	<b>98%</b>	<b>82%</b>	<b>99%</b>
<b>Expanded Gallbladder Fossa</b>	<b>68%</b>	<b>98%</b>	<b>80%</b>	<b>98%</b>
<b>Narrow Right Hepatic Vein (&lt;5mm)</b>	<b>59%</b>	<b>99%</b>		
<b>Caudate to right lobe ratio (&gt;0.90)</b>	<b>71.7%</b>	<b>77.4%</b>	<b>74.2%</b>	
<b>Expanded Hilar Periportal Space (&gt;10mm thickness)</b>	<b>93%</b>	<b>92%</b>	<b>92%</b>	<b>91%</b>

## References

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