



Overview of US LI-RADS for standardising HCC ultrasound surveillance

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Introduction & Aims

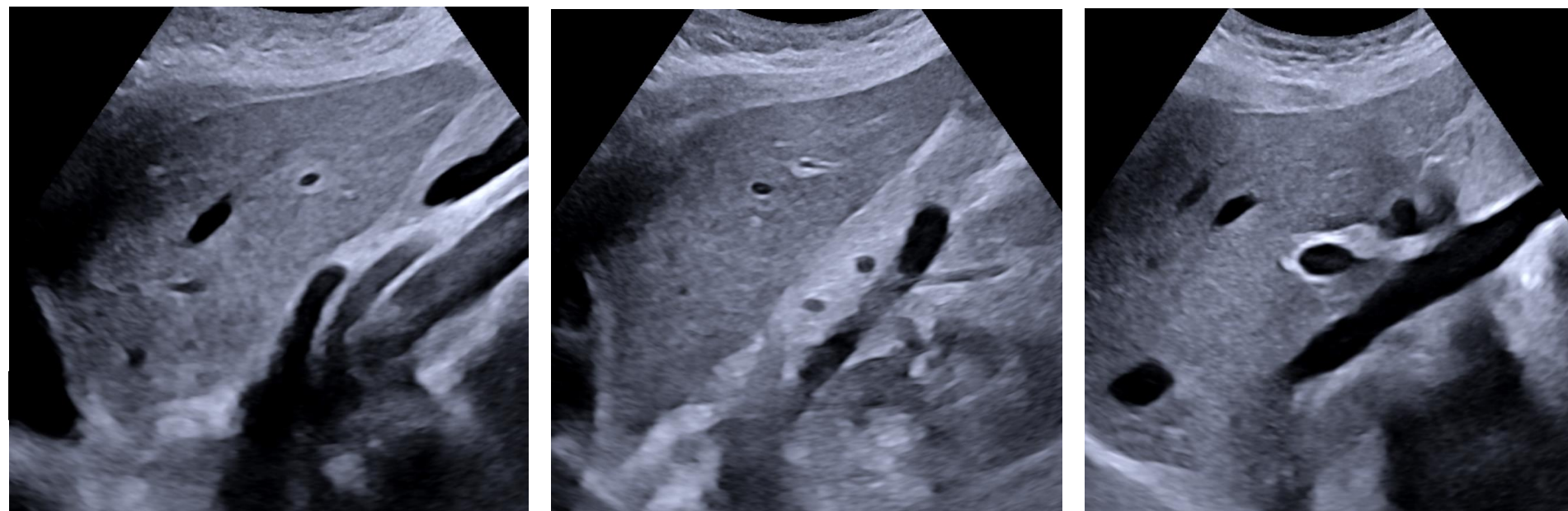
- The UK sees an approximately 6000 new cases of liver cancer per annum², with a year-on-year increase since the early 1990s. Early detection improves outcomes. Current UK Guidelines recommend biannual surveillance with ultrasound (US) but there is no or limited standardised protocol for these scans³.
- US LI-RADS was established in 2006 after the breast (BI-RADS) system. Its most recent version was published in 2024.¹
- This poster aims to highlight the core features of the US LI-RADS (ultrasound liver imaging reporting and data system for screening and surveillance of hepatocellular carcinoma) which standardises imaging technique and reporting for ultrasound performed for HCC surveillance that can be easily adopted to current practice.

US LI-RADS recommended views (LS)^{1,5}

A. Longitudinal

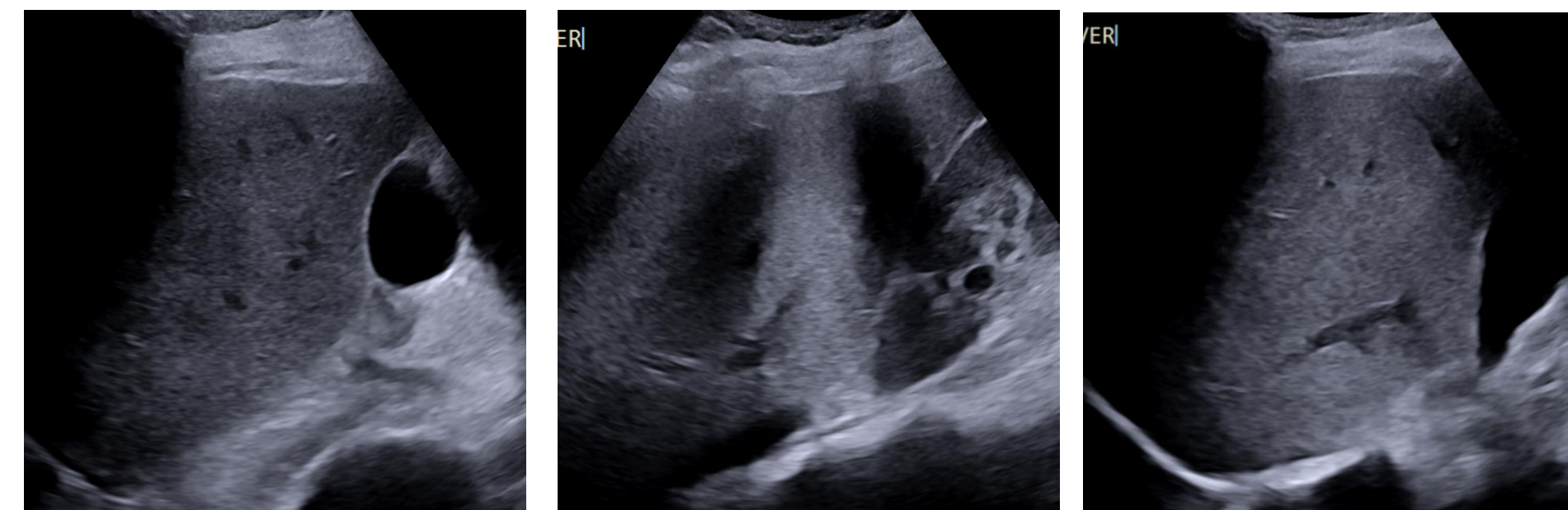
Left lobe¹

- Include proximal abdominal aorta, coeliac artery, SMA
- IVC, caudate lobe, main portal vein, pancreatic head

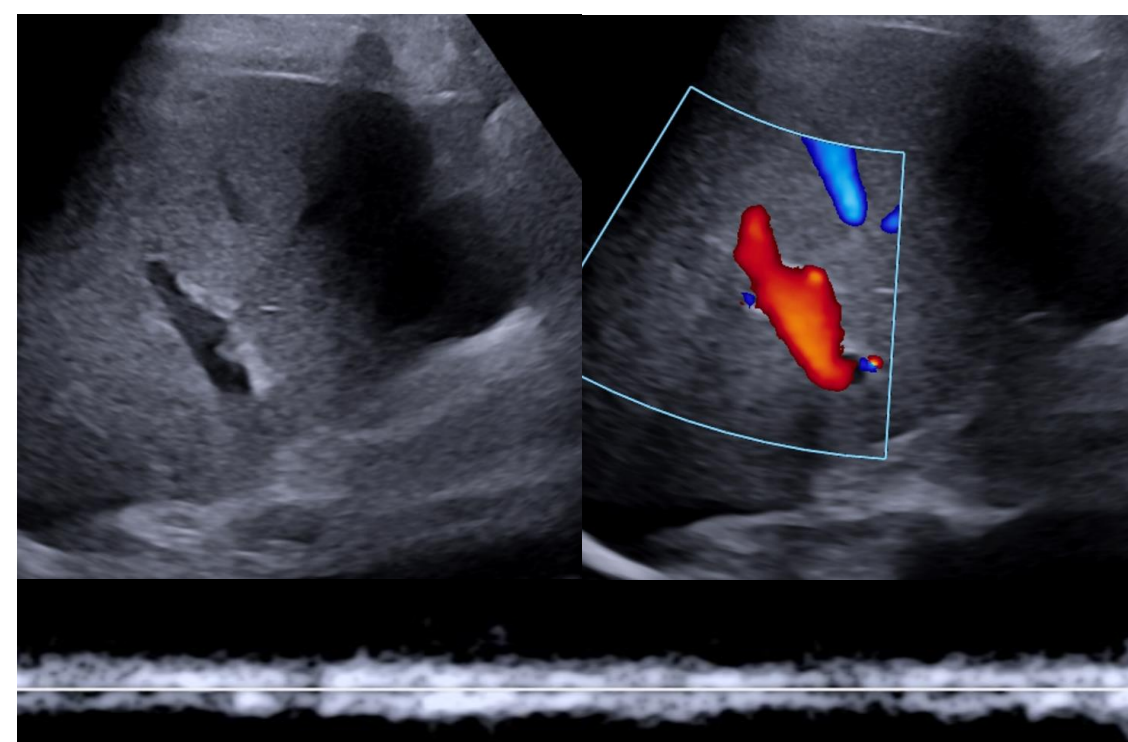


Right Lobe

- Gallbladder, right kidney, hemidiaphragm



- Colour and Spectral Doppler of main portal vein to assess waveform, velocity and flow



US LI-RADS recommended views (TS)^{1,5}

B. Transverse

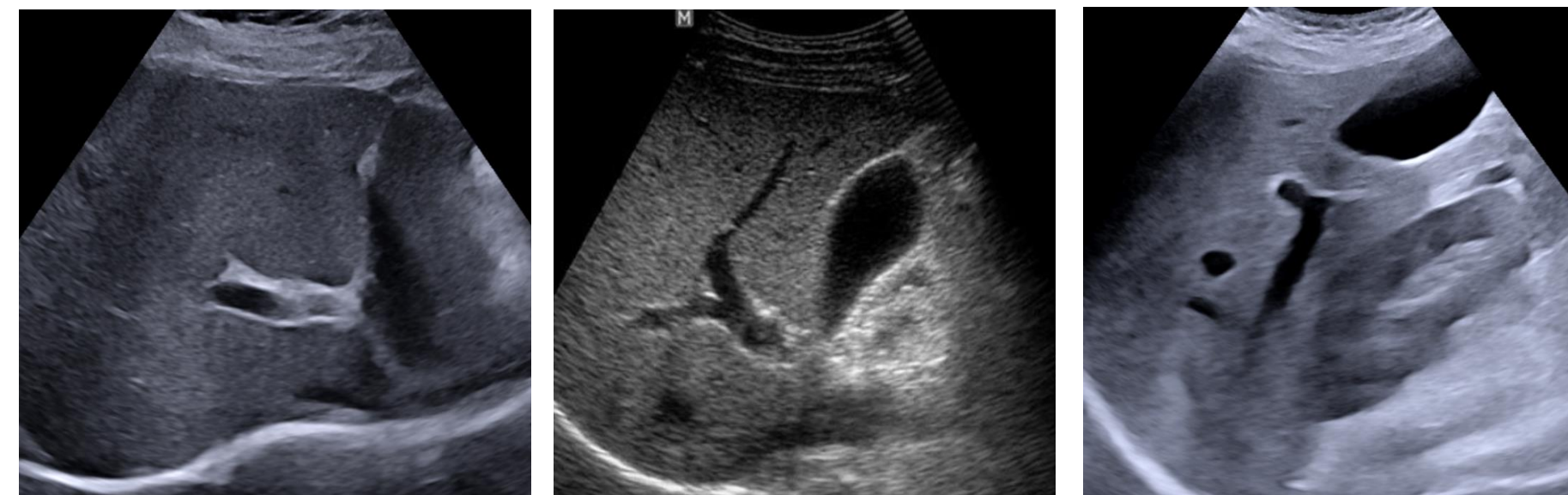
Left lobe

- Liver edge and left portal vein
- Falciform ligament to evaluate paraumbilical vein



Right Lobe

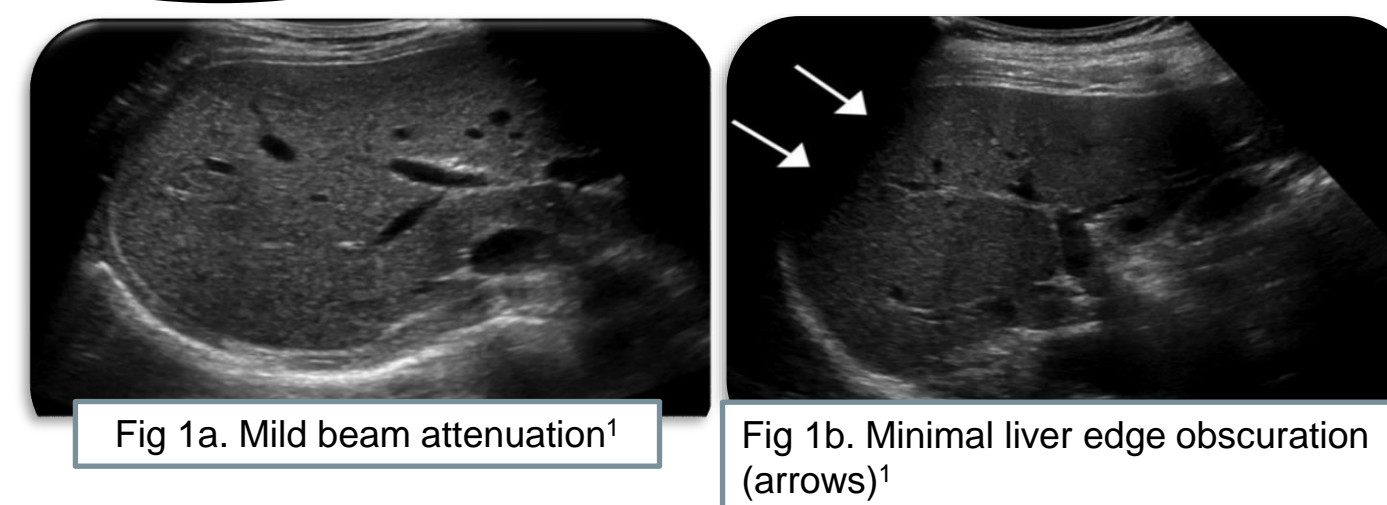
- Right portal vein, main portal vein
- Gallbladder, right kidney



US Visualisation Score¹

VIS-A

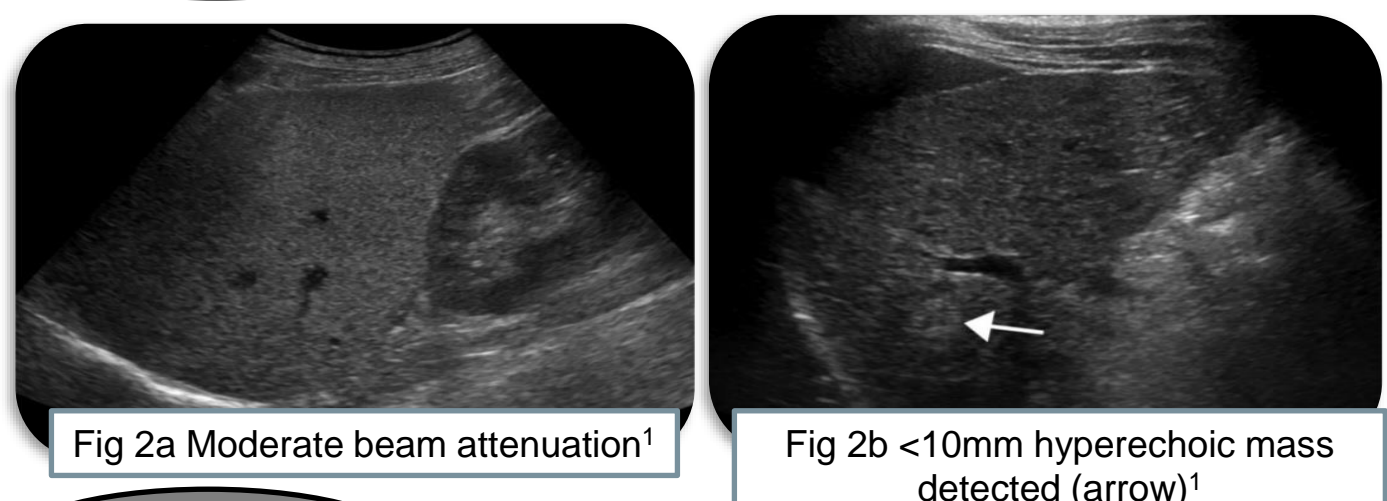
No or Minimal limitation



- Minimal beam attenuation or shadowing
- Liver visualised in near entirety

VIS-B

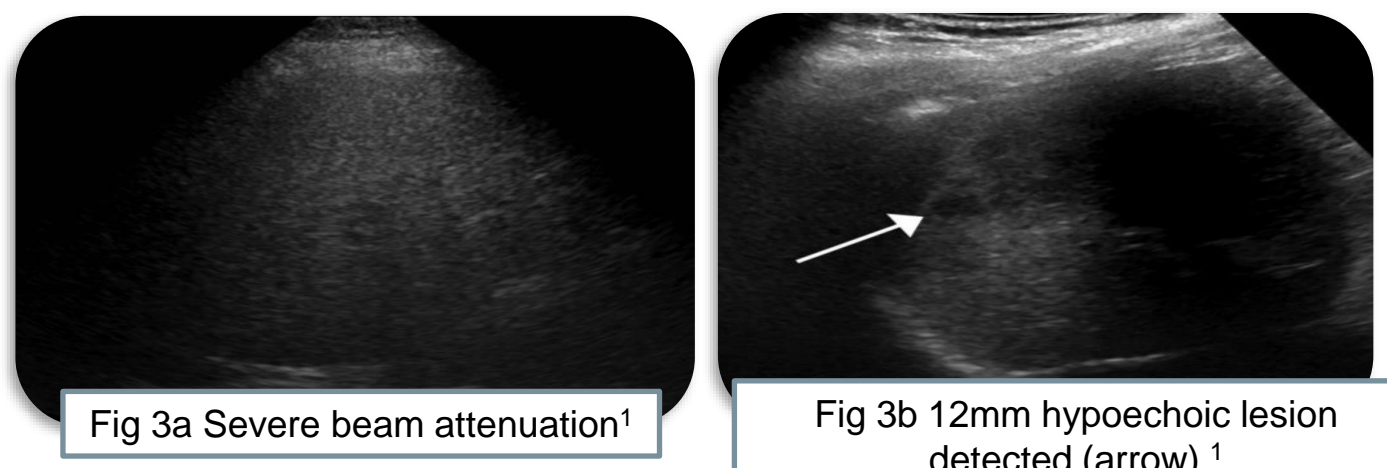
Moderate limitations



- Moderate beam attenuation
- Small <10mm observations impacted
- Some portions of liver not seen

VIS-C

Severe limitations



- Severe beam attenuation
- Majority >50% of right or left lobe not seen
- Majority >50% of diaphragm not seen

LI-RADS US-Category¹

US1

Negative: No lesion or a *definitely* benign lesion.

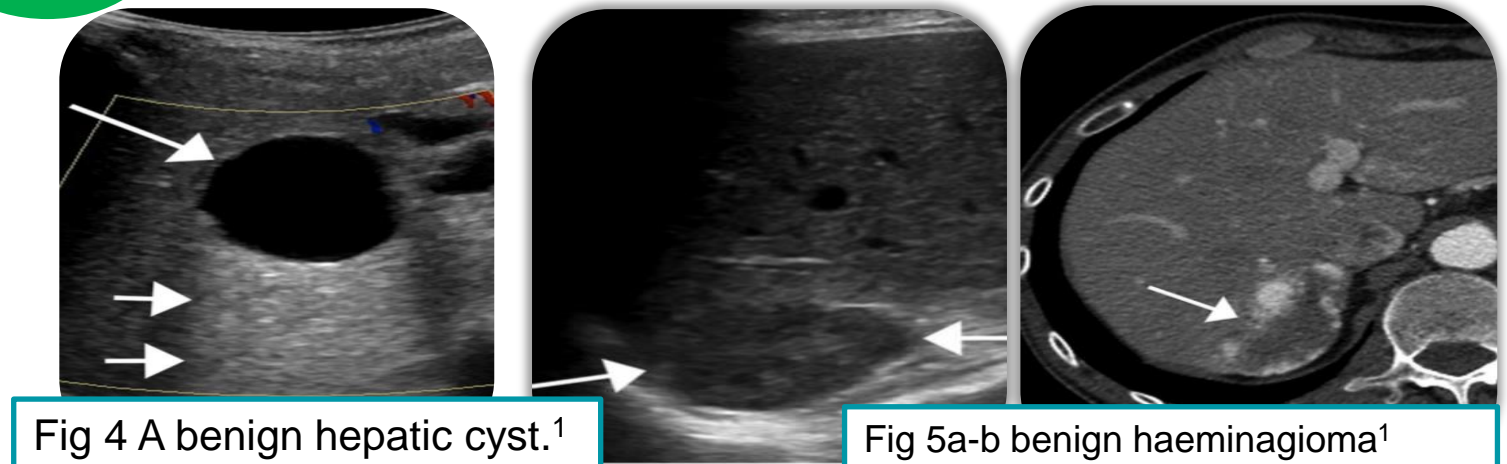
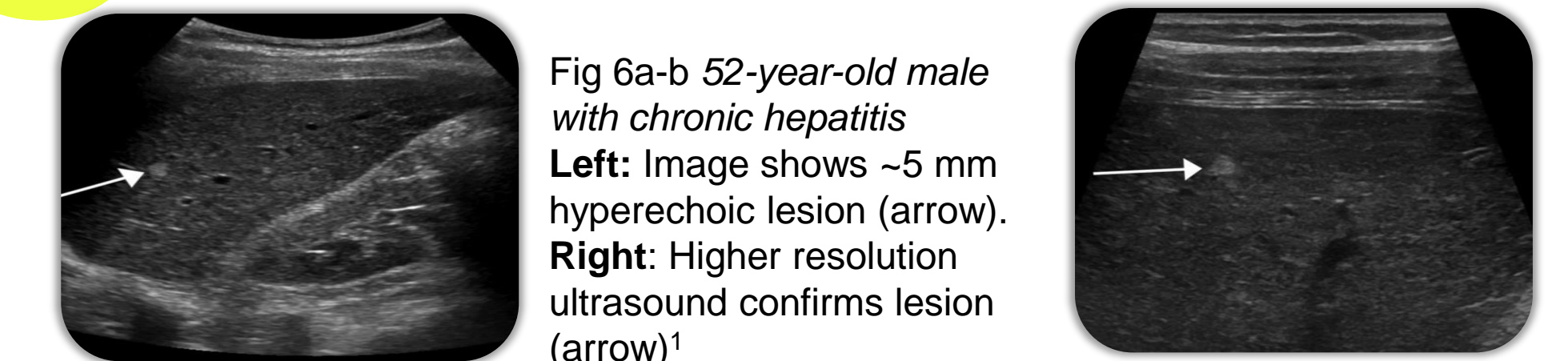


Fig 5a-b 49-year-old male with chronic hep B. Initially suspected as HCC but review of prior CT confirmed benign hemangioma. (US-1)¹

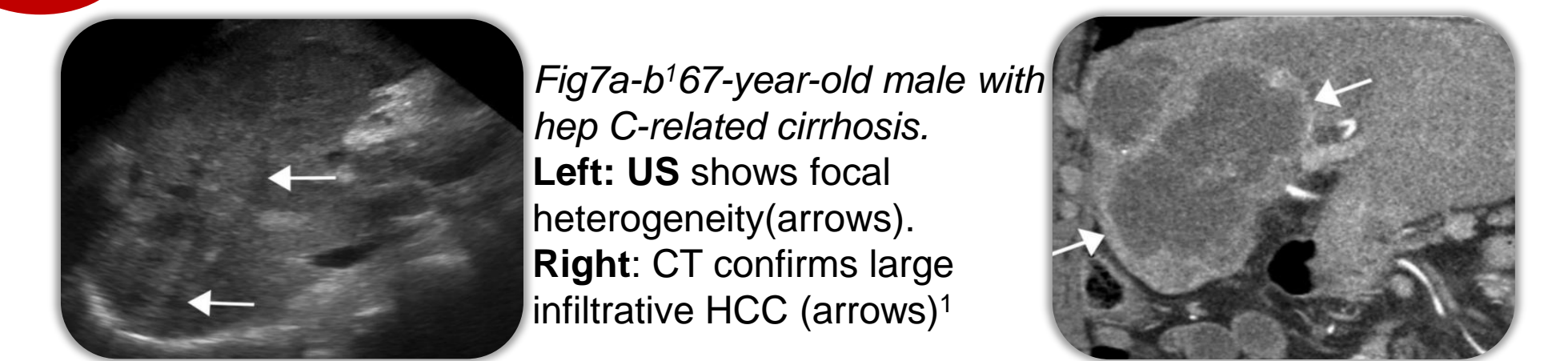
US 2

Subthreshold: lesion(s) <10 mm in diameter, not definitely benign.



US 3

Positive: lesion(s) ≥10 mm in diameter, not definitely benign/ new thrombus.



Reporting Template^{1,5}

Visualisation: [VIS-A, VIS-B, VIS-C]. (If VIS-B or C, state why)

Liver morphology/parenchyma/contour: [Echotexture, echogenicity, smooth, nodular]

Liver observation(s): [Any focal lesion: location, size, echogenicity]

Liver vasculature: [portal vein and hepatic veins]

Bile ducts: [Describe biliary tree] Common duct diameter is [CHD size] at the porta hepatis.

Gallbladder: [gallbladder findings]

Spleen: [size of spleen]

Other organs (optional): [pancreas, aorta, IVC, kidneys]

Ascites: [No ascites/ small /moderate/ large volume of ascites]

Other findings: [Varices, paraumbilical vein, lymph nodes, etc.]

US category: [US-1, US-2, US-3]

Conclusion

- There is variable practice for US HCC surveillance in the UK.
- Adopting ACR US LI-RADS could enhance ultrasound standardisation, improving communication with patients and referring physicians.

References :

- Morgan, T.A., Maturen, K.E., Dahiya, N., Sun, M.R., Kamaya, A. and American College of Radiology Ultrasound Liver Imaging and Reporting Data System (US LI-RADS) Working Group, 2018. US LI-RADS: ultrasound liver imaging reporting and data system for screening and surveillance of hepatocellular carcinoma. Abdominal Radiology, 43, pp.41-55.
- Liver cancer (2021) Cancer Research UK. Available at: <https://www.cancerresearchuk.org/about-cancer/liver-cancer> (Accessed: 26 April 2024).
- Roskilly, A. and Rowe, I.A., 2018. Surveillance for hepatocellular cancer. Clinical Medicine, 18(Suppl 2), p.s66.
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