

Sonographer Lead Contrast Service

Can we do more? A single centre audit

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Background

Contrast Enhanced Ultrasound (CEUS) has been delivered in our institution since 2004. The service started to assess incidental focal liver lesions. Service audit in 2008 demonstrated concordance between CEUS and secondary imaging of 88% (12% discrepancy rate).

Incidental findings from non-contrast CT/CT colonoscopy has seen increase in CEUS to characterise incidental lesions, for which we have developed a sonographer led CEUS service.

Despite NICE (2012) and EFSUMB (2017/2018) guidelines, which all advocate the use of CEUS as a first line investigation, limited adoption of CEUS led services exist due to lack of support from some radiologists and clinicians.

Aim

Compare CEUS findings with secondary imaging, to establish a defined pathway incorporating CEUS as a primary investigation for characterisation of incidental lesions.

Methodology

All CEUS examinations of incidental lesions performed in 2017 (207) were reviewed and compared with previous and subsequent imaging. CEUS findings and any secondary imaging tests were scored as benign, malignant or indeterminate.

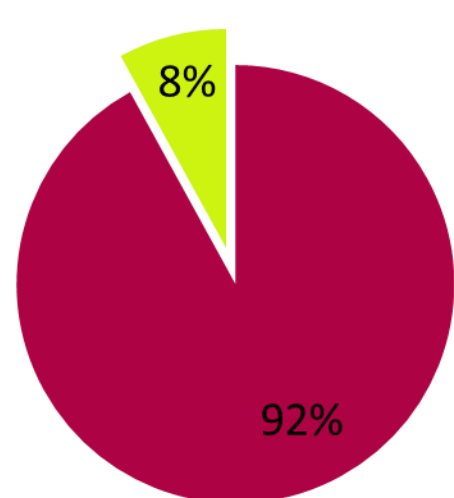
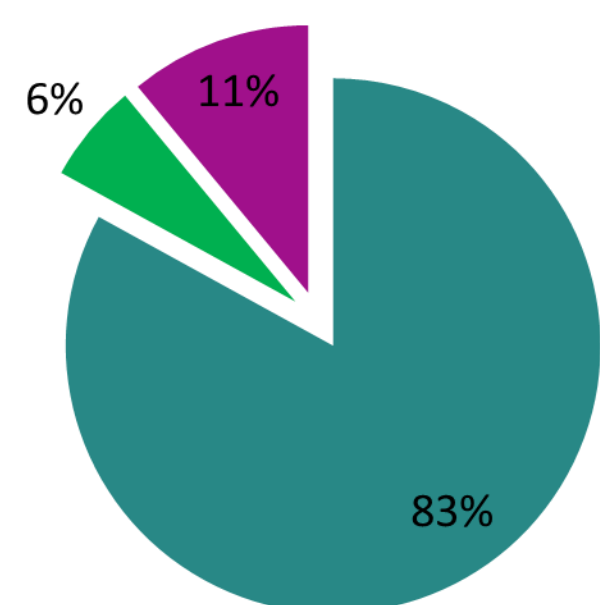
Results

- 207 lesions were interrogated with CEUS in 2017. All of these lesions had had prior imaging with either US, CT or MRI and were referred to the CEUS service for characterisation
- 83% of CEUS examination were characterised as benign, 11% malignant and 6% were indeterminate
- 46% of cases had secondary imaging; there was agreement between primary and secondary imaging in 92%. There were discrepancies in 8% (5) of cases. Two examples of these discrepancies are discussed in this poster

Number CEUS scans carried out (n=207) Percentage agreement with secondary imaging (n=95)

■ Benign ■ Indeterminate ■ Malignant

■ Agreement ■ Disagreement



		CEUS +/- FGUS Characterisation	
		Malignant/indeterminate	Benign
CT / MRI Characterisation	Malignant/indeterminate	30 (14.5%)	5 (2.2%)
	Benign	1 (0.5%)	169 (82.5%)
		Sensitivity	Specificity
		85.7%	99.4%

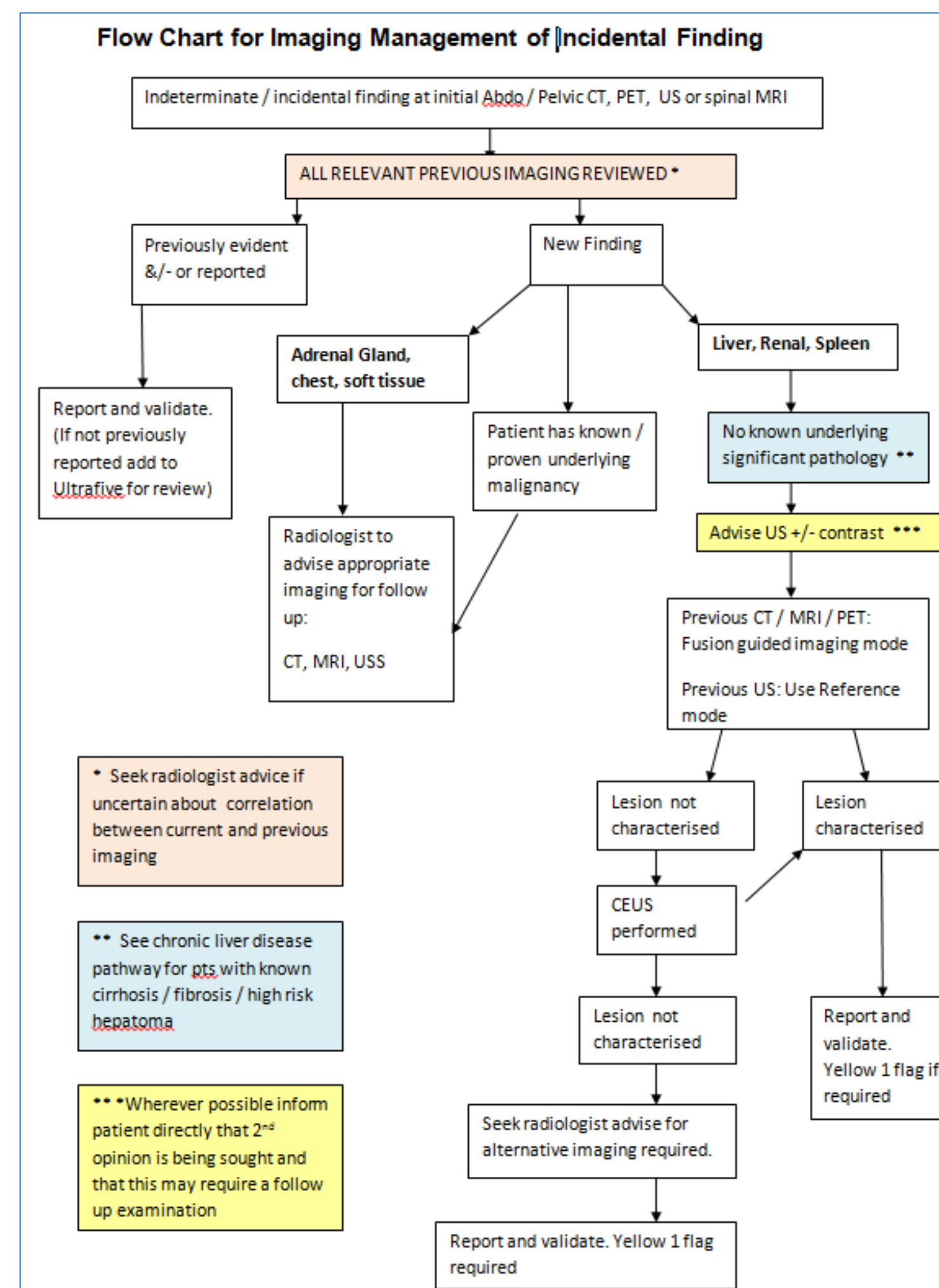
Table of Sensitivity and specificity of CEUS

Conclusion

These results have shown that CEUS delivers high specificity and good sensitivity for characterisation of focal lesions. Negative predictive value ensures our patients and clinicians can be reassured by the exams outcome. Discrepancy rate (2.9%) is comparable with non-contrast ultrasound (3.4%) and compares favourably with published radiological error rates (3-5%). Pitfalls of CEUS often relate to perfusion characteristics of differing lesions and artefactual issues; thus well-founded knowledge concerning CEUS technical aspects is important to avoid misinterpretation.

Recommendations

CEUS +/- FGUS is recommended as a first line investigation to characterise unsuspected focal lesions initially demonstrated on US or cross sectional imaging. Radiology wide adoption of the following flow chart is advised.



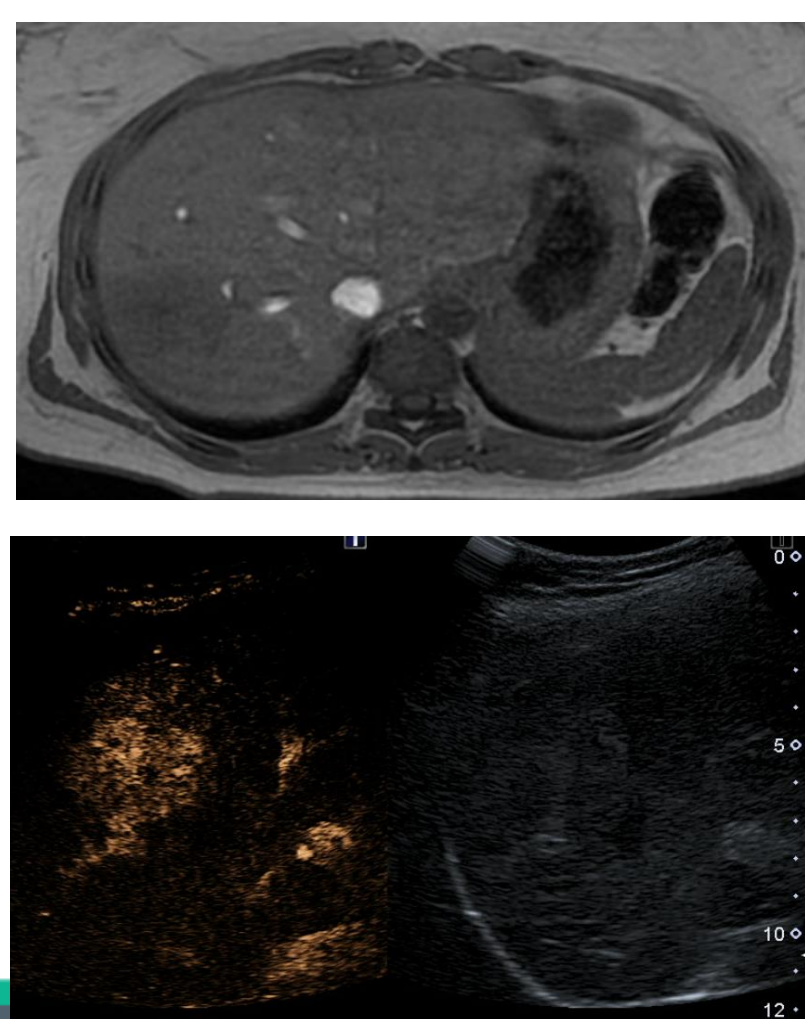
Examples of Discrepancy Cases

Case 1.

Background: Liver lesion seen on non-contrast ultrasound for characterisation

CEUS diagnosis: Rapid arterial in-filling with the presence of a central scar. The lesion remains iso-perfused throughout the rest of the contrast cycle with no late phase washout. Appearance in-keeping with FNH.

MRI diagnosis: Fibrolamellar HCC.



Case 2.

Background: Incidental renal lesion detected on CT colonoscopy

CEUS/fusion guided diagnosis: No perfusion throughout the lesion. Simple cortical cyst.

CT diagnosis: Repeat CT colonoscopy shows concerning changes to the left renal lesion. RCC confirmed at contrast CT.

