## SHORT PAPER SESSION K2

### K2.1 Embolisation of hepatic haemangioma causing heart failure in a 9-day-old neonate via femoral access: a rare interventional radiology case

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A 9-day-old neonate, born at 37+5 weeks' gestation with an antenatal diagnosis of multifocal hepatic haemangiomas (HH), presented with progressive congestive heart failure. Imaging confirmed highly vascular liver lesions with arteriovenous shunting. Following a multidisciplinary review and failed propranolol therapy, vascular redistribution embolisation was performed via femoral arterial access. Partial selective embolisation of hepatic arterial branches used microcoils and a vascular plug, preserving overall hepatic perfusion. The procedure was well tolerated with no complications and led to clinical improvement. This case illustrates the feasibility and safety of performing complex vascular interventions in neonates, highlighting the evolving role of interventional radiology in managing life-threatening complications of congenital hepatic haemangiomas (CHH), and offering an alternative when medical therapy is unsuccessful.

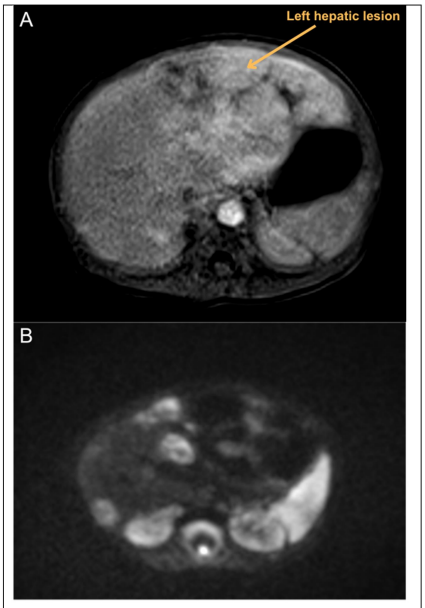


Figure 1. Postnatal MRI of congenital hepatic haemangiomas.
(a) Axial T1-weighted fat-saturated post-contrast MRI (arterial phase) demonstrating a large hypervascular lesion in the left hepatic lobe (arrows). Image quality is suboptimal due to motion artefact related to neonatal sedation and lack of breath-holding.
(b) Diffusion-weighted imaging (DWI, b=800) demonstrating additional hyperintense lesions affecting both hepatic lobes, consistent with multifocal disease.

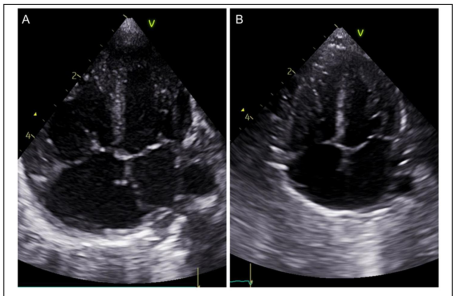


Figure 2. Echocardiographic apical four-chamber views before and after embolisation.
(a) Pre-embolisation image showing significant dilation of the right atrium and right ventricle.
(b) Post-embolisation image showing resolution of right heart chamber enlargement, indicating improved haemodynamics.

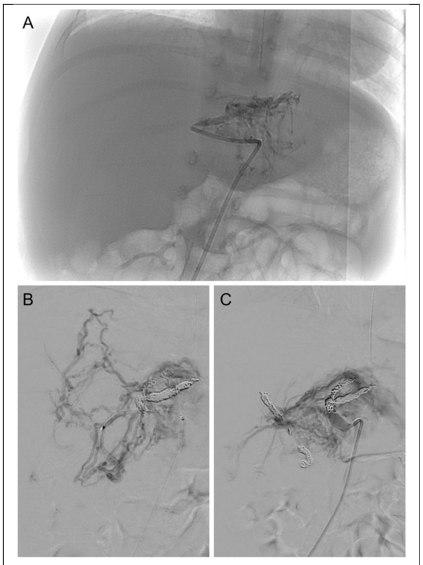


Figure 3. Diagnostic and therapeutic angiographic images from the embolisation procedure.
(a) Pre-embolisation selective hepatic arterial angiogram demonstrating a hypervascular congenital hepatic haemangioma with early venous drainage consistent with arteriovenous shunting.
(b) Diagnostic angiographic run highlighting the arterial supply and rapid venous outflow of the lesion.
(c) Post-embolisation angiogram demonstrating partial devascularisation following deployment of microcoils.

1. Barnacle, A.M. (2014) Interventional radiology in infancy. Early Human Development 90(11), 787–790.
2. Triana, P., Rodríguez-Laguna, L., Giacaman, A., Salinas-Sanz, J.A., Martín-Santiago, A. and López-Santamaría, M. (2020) Congenital hepatic hemangiomas: Clinical, histologic, and genetic correlation. Journal of Pediatric Surgery 55(10), 2170–2176.

### K2.2 Cardiac risk management in radiotherapy: Results of the RICD-IMPACT survey

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**Background**
Incidental irradiation of the heart, due to its presence within the treatment field, results in radiation induced cardiac disease (RICD) after treatment. The late effects caused by RICD can affect a patient's quality of life and these patients are more likely than the general population to have a cardiac event. Current guidance recommends that radiotherapy departments should stratify patients based on cardiac toxicity risk and effective management strategies should then be implemented for those most at risk [1].
**Methods**
A UK wide online survey of radiotherapy centres was conducted to investigate the current practices for the identification, treatment and management of patients most at risk of developing RICD as a consequence of radiotherapy treatment.

**Results**

68% of Radiotherapy centres completed the survey. 16% of respondents believed their centre categorised patients based on risk of developing long term cardiac complications. Generally, this classification was not based on any specific guidance and was largely an informal process. Only one trust had awareness of specific cardiac oncology referral pathway(s) or cardio-oncology MDT where these patients could be referred to for discussion. Only 2 responses (5%) detailed any investigations that would be undertaken for high-risk patients. Beyond standard consent procedures limited information resources are available to patients to inform them of their risk or self-management following completion of treatment.

**Conclusions**

Despite the presence of international guidance for providing care to oncology patients before, during and after their cancer treatment with respect to cardiovascular health their adoption within UK radiotherapy departments is extremely limited.

1. Lyon AR, López-Fernández T, Couch LS, et al. 2022 ESC Guidelines on cardio-oncology developed in collaboration with the European Hematology Association (EHA), the European Society for Therapeutic Radiology and Oncology (ESTRO), and the International Cardio-Oncology Society (IC-OS). Eur Heart J. 2022;43(41):4229-4361. doi:10.1093/eurheartj/ehac244.

## K2.3 From Introduction to Optimisation: Enhancing Dual-Energy CT Pulmonary Angiography Protocols

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**Background**

Pulmonary embolism (PE) and chronic thromboembolic pulmonary hypertension (CTEPH) require accurate imaging for diagnosis and treatment. V/Q scintigraphy remains guideline-recommended for CTEPH screening(Humbert et al., 2022), while conventional CT-pulmonary-angiography(CTPA) is widely available but can miss subtle or distal chronic disease and provides limited functional information (Tunariu et al., 2007). Dual-energy CTPA (DE-CTPA) can add iodine perfusion maps and virtual monoenergetic images in a single examination, but local implementation requires optimisation to balance diagnostic value with radiation dose and to confirm iodine quantification reliability(McCollough et al., 2015).

**Method**

A retrospective patient dose audit (Jan2025–Dec2025) was performed using Radimetrics, extracting CTDIvol and DLP for adult CTPA, TurboFlash and DE-CTPA on Siemens Force scanners. Local diagnostic reference levels (medians and percentile distributions) were benchmarked against the national diagnostic reference level (Public Health England, 2019). Iodine-insert phantom scans assessed the CNR, SNR and capability of perfusion mapping at different kV combinations.

**Results**

Local DRLs were below the NDRL for all three protocols. DE-CTPA showed the lowest dose distribution (median DLP 104mGycm [IQR 84–113]) compared with standard CTPA (154mGycm [IQR 137–194]). DE-CTPA 95th percentile DLP was 189mGycm versus the NDRL of 310mGycm. Phantom analysis demonstrated high linearity between HU and iodine concentration, supporting reproducible iodine quantification and feasibility of iodine perfusion maps.

**Conclusion**

DE-CTPA can be implemented locally at doses below national benchmarks while enabling quantitative iodine assessment. Limitations include small DE-CTPA clinical sample size, ongoing work will expand the audit and refine acquisition/reconstruction parameters to maximise diagnostic value in CTEPH while maintaining ALARP.

Humbert, M., Kovacs, G., Hoeper, M.M., et al. (2022) 2022 ESC/ERS Guidelines for the diagnosis and treatment of pulmonary hypertension. European Heart Journal, 43(38), 3618–3731.

McCollough, C.H., Leng, S., Yu, L. and Fletcher, J.G. (2015) Dual- and multi-energy CT: principles, technical approaches, and clinical applications. Radiology, 276(3), 637–653.

Public Health England (2019) National Diagnostic Reference Levels (NDRLs) for CT. London: PHE.

Tunariu, N., Gibbs, S.J., Win, Z., et al. (2007) Ventilation–perfusion scintigraphy is more sensitive than multidetector CTPA in detecting chronic thromboembolic pulmonary disease. Journal of Nuclear Medicine, 48(5), 680–684.

## K2.4 Ultra-low dose CT for latent tuberculosis detection - optimising imaging in a high-risk population

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**Purpose**

Latent tuberculosis infection (LTBI) affects over one quarter of the global population and poses a significant risk of reactivation in immunocompromised patients (WHO et al. 2020). Accurate radiological assessment is essential. This study evaluated diagnostic performance, image quality, and radiation dose of ultra-low-dose-CT (ULDCT) compared with chest radiography (CXR) for detecting radiological features of LTBI.

**Methods**

In this prospective single centre study, adults undergoing LTBI screening prior to commencing immunosuppressive therapy underwent IGRA testing, standard CXR, and ULDCT thorax. Subjective and objective image quality were independently assessed by two blinded radiologists. Granuloma detection and additional LTBI related findings were recorded. Statistical analyses included inter observer agreement, paired modality comparison, and radiation dose assessment.

**Results**

Thirty four participants (mean BMI 28.8 kg/m$^2$) were included. Mean effective dose was comparable between ULDCT (0.08 ± 0.01 mSv) and CXR (0.10 ± 0.07 mSv). Deep learning iterative reconstruction (DLIR) produced significantly higher and more consistent image quality than model based iterative reconstruction. ULDCT detected granulomas in 12 patients (16 lesions) compared with two detected on CXR. CXR sensitivity for granuloma detection was 0% (95% CI: 0–26.5%) using ULDCT as a reference. ULDCT also identified pulmonary nodules, mediastinal lymphadenopathy, calcified nodes, and incidental findings not visible on CXR, including features suspicious for active tuberculosis in two cases.

**Conclusion**

ULDCT, particularly with DLIR, provides substantially improved detection of LTBI related abnormalities compared with CXR at equivalent radiation dose supporting the use of ULDCT as a first line imaging modality in this cohort.

1. WHO. Tuberculosis Report. Vol XLIX.; 2020.