Occult cholecystitis presenting as PUO demonstrated on Gallium

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Citation

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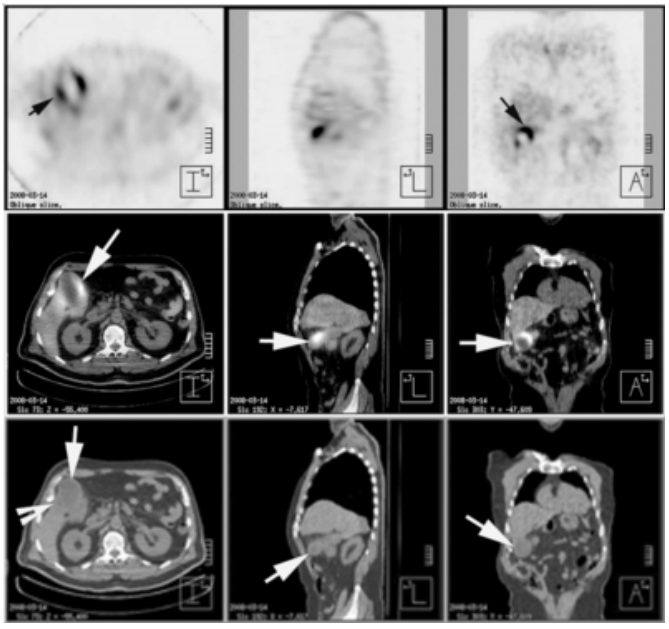
Abstract

Gallium-67 scintigraphy is commonly performed to investigate Pyrexia of Unknown Origin (PUO) due to its affinity for infection or inflammation. The dissemination of hybrid SPECT CT imaging allows improved identification and localisation of causes of PUO. A 74 year old male was referred for investigation of pyrexia of unknown origin. Gallium SPECT CT was performed and demonstrated increased Gallium uptake in the gallbladder wall with features of cholelithiasis and collection on the corresponding CT images. At operation the gallbladder revealed areas of chronic cholecystitis and xanthogranulomatous inflammation.

Figure 1

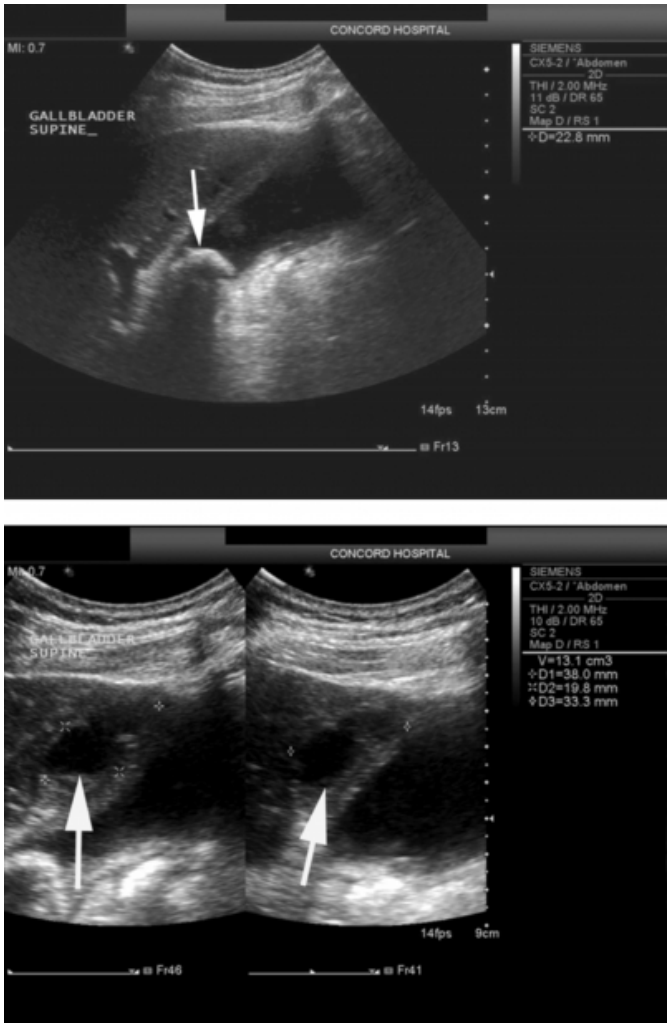
Figure 1: A 74 year old male was referred for investigation of pyrexia of unknown origin. A Gallium scan was performed and a whole body planar and SPECT/CT were acquired up to 48 hours following the administration of 300 MBq of Ga-citrate.



Gallium SPECT (Top Row) and SPECT/CT fused (Middle Row) images demonstrated increased Gallium uptake in the gallbladder wall (solid arrow). CT (Bottom Row)) images also revealed pericholecystic fat stranding (arrowhead) and a small collection at the interface between the gallbladder and the liver (solid arrow).

Figure 2

Figure 2: An ultrasound was performed for further evaluation. The US demonstrated a non-mobile calculus (solid arrow) in the gallbladder neck (Top image) and confirmed cholecystitis (Lower image) with a pericholecystic collection (solid arrow). The patient subsequently underwent laparotomy and cholecystectomy. A 39mm diameter gallstone and a haemorrhagic inflamed gallbladder were removed. Histologic examination revealed organising chronic cholecystitis and areas of xanthogranulomatous inflammation.



There are number of causes of PUO including pyogenic infection (soft tissue abscess, pneumonitis, musculoskeletal), non-pyogenic infection (mycobacterial, viral, chronic bacterial, fungal/rickettsial), non-infective inflammation (sarcoidosis, inflammatory bowel disease, vasculitis, "collagen" disease, organ rejection), and neoplasia (haemoproliferative, renal cell carcinoma, melanoma). [1,2]

There are a number of proposed mechanisms of ^{67}Ga uptake into pathologic sites including increased vascular permeability to ^{67}Ga-transferrin complex, radiotracer accumulation in expanded regional vascular and interstitial fluid spaces, and binding of the metal-protein complex to extravascular transferrin receptors. [3,4,5]

Cholecystitis is a relatively common condition usually diagnosed clinically and confirmed by ancillary laboratory investigations and imaging with ultrasound and hepatobiliary scintigraphy. [6,7,8] The addition of Hybrid SPECT CT to ^{67}Ga scintigraphy improves the sensitivity and specificity of the modality in investigating PUO.

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