Diagnosis of Bronchobiliary Fistula—Utility of ^{99m}Tc -Mebrofenin Scan and SPECT/CT

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A broncho-biliary fistula (BBF) is difficult to diagnose in the absence of biliptysis. We present here the case of a 3-year-old female child who developed a BBF that was diagnosed on a ^{99m}Tc -Mebrofenin hepatobiliary (HIDA) scan. In this case, the cause was due to a complicated amoebic liver abscess that progressively ruptured through the right pleural space. We have also demonstrated tracer accumulation in the posterobasal part of the right lung along with consolidation, which is direct evidence that bile is accumulating in the lung on single-photon emission computed tomography/X ray computed tomography (SPECT/CT) (Figs. 1 and 2).

A BBF may be congenital or may be caused due to liver abscess, hepatic hydatid cyst, hepatic tumors, post-hepatic resection, following radiofrequency thermal ablation of hepatic tumors, chronic pancreatitis and sometimes as a complication of transcatheter arterial embolisation (TAE). In the majority of cases, BBF is caused by hepatic or subphrenic abscesses that arise from different conditions of liver abscess with or without biliary lithiasis [1–4]. Rare causes of BBF

include complication after long-term stenting of hepatic ducts, applied by endoscopic retrograde cholangiopancreatogram (ERCP) after hepatobiliary surgery, due to hydatid cyst and also complications due to hepatic endometriosis [5, 6].

In our case, the cause was due to complication of amoebic liver abscess, which progressively ruptured through the right pleural space. BBF is difficult to diagnose and requires a high clinical index of suspicion, though sometimes biliptysis may clinch to the diagnosis. But in our case, there was no biliptysis. Although diagnosis of bronchobiliary fistula has been shown by use of contrast-enhanced magnetic resonance cholangiography, HIDA scan, which is easy, conclusive and free of contrast-related complication, has proven to be a better alternative, and better for postoperative surveillance in BBF [7–11]. We have also demonstrated tracer accumulation in the posterobasal part of the right lung along with consolidation, which is direct evidence that bile is accumulating in the lung on SPECT/CT.

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Fig. 1 A,1B: A 3-year-old child, with a history of ruptured amoebic liver abscess 7 months ago, presented with abdominal distension, cough and vomiting for the last 2 days. Bronchoscopy revealed bilious stained oozing; hence, there was a clinical suspicion of bronchobiliary fistula (BBF). Serial dynamic and static images of ^{99m}Tc -mebrofenin hepatobiliary scintigraphy (HIDA) showed good hepatocyte tracer uptake and excretion of tracer into gut within 30 min of radiotracer

injection, and an ascent of tracer from the superolateral surface of the liver to the right lung, entering the right bronchus. Dynamic and early static images of ^{99m}Tc -mebrofenin hepatobiliary scintigraphy showing good hepatocyte tracer uptake and excretion of tracer into gut within 30 min of radiotracer injection. Also noted is an ascent of tracer from the superolateral surface of the liver to the right lung, entering the right bronchus

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Fig. 2 a Delayed static images (1 h, 2 h) confirm the early findings. Tracer was also seen refluxing from a nasogastric tube that had probably crossed the pylorus. b SPECT/CT shows tracer accumulation in the posterobasal part of the right lung, along with consolidation