

## Air cholangiogram is not sufficient to detect common bile duct stones during ERCP

To the Editor,

Endoscopic retrograde cholangiopancreatography (ERCP) is the gold standard treatment choice for choledocolithiasis. Radiocontrast agent can cause cholangitis and rarely allergic reactions (1-3). Air cholangiogram is a new technique for biliary imaging during ERCP. There are some studies on air being used as a contrast agent in patients with contrast allergies, and hiler tumor (4-7). Although, most common indication for ERCP is for common bile duct (CBD) stones, there are no data on the quality and safety of air cholangiogram in CBD stones. Therefore, we planned the present study to evaluate the efficacy and safety of air cholangiogram in CBD stones.

A prospective, uncontrolled, single center pilot study was conducted between June and September 2011. Patients presented with CBD stones were considered for the study. Informed consent was obtained from all patients. Approval was received from the local ethics committee. All patients were evaluated for demographic variables, clinical presentation, and laboratory results. Pre-procedure abdominal ultrasounds and/or Magnetic Resonance Cholangio- Pancreatographies were obtained to confirm the diagnosis. Midazolam (2-5 mg) and hyosine butylbromide (40-60 mg) were used as premedications. All ERCP procedures were performed by using the Pentax side-viewing endoscope, with the patients in the prone position. After attaining access to the biliary system with an ERCP cannula, bile was aspirated (minimum 20 mL) to confirm the position and to decrease the intraductal pressure. Air cholangiogram was then obtained by injecting 10 to 15 mL of air, and opacified ductal system was investigated for stone. The degree of CBD and intrahepatic bile ducts visualization, the degree of pain explained during insufflation, if any, and presence of a stone or any other pathology in the biliary system were noted. Then, the air was as-

pirated, radiocontrast agent was injected instead, and cholangiogram was obtained. The degree at which the biliary system visualized and the degree of the pathology were noted, if any. Biliary sphincterotomy was conducted and the stones in the biliary tree were extracted via balloon and/or

Totally 14 patients (9 female/5 male, mean age 59 years) were included in the study. The cannulation of CBD performed in all patients, successfully. The dilatation of CBD/biliary tree was demonstrated in air cholangiogram in all patients but CBD stones couldn't demonstrated in any patients except one, in whom, radiocontrast viewed two stones whereas air cholangioram only one. After injection of radioopaque contrast medium, CBD stones were visualized in all patients except one and 1 black pigment stone with 8 mm in diameter extracted from this patient. (Figure 1 and Figure 2) Eight patients explained pain during air cholangiogram, three as severe, three as moderate. One experienced pain only during radiocontrast injection. Sensitivity, and accuracy on detection of CBD stone were 7,1% for air, and 92,8% for radiocontrast cholangiograms, respectively. Insufficiency of air cholangiogram realized at interim analyse, thus the study was terminated.

This new method of using air as a contrast media instead of radiocontrast found to be helpful for determination of bile ducts, but not an effective method to show CBD stones and the exact anatomy. Therefore, as an alternative method, air cholangiogram can be used for demonstrating the cannulation of the biliary tree in patients at risk of allergic reactions, whereas thought to be insufficient for the demonstration and evaluation of gallstones.

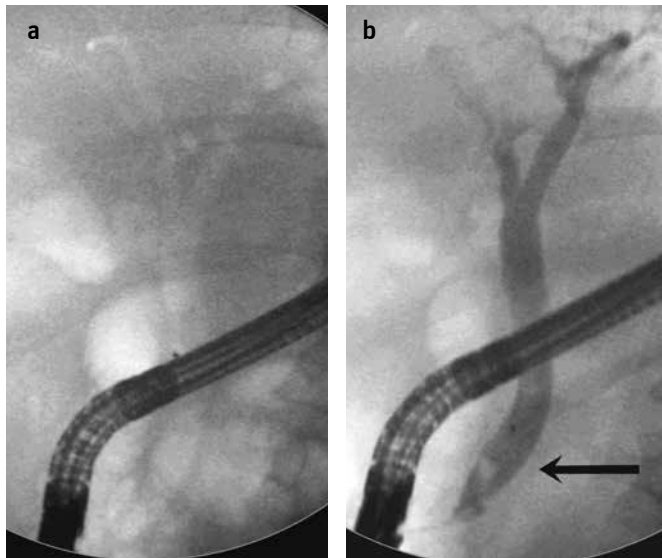
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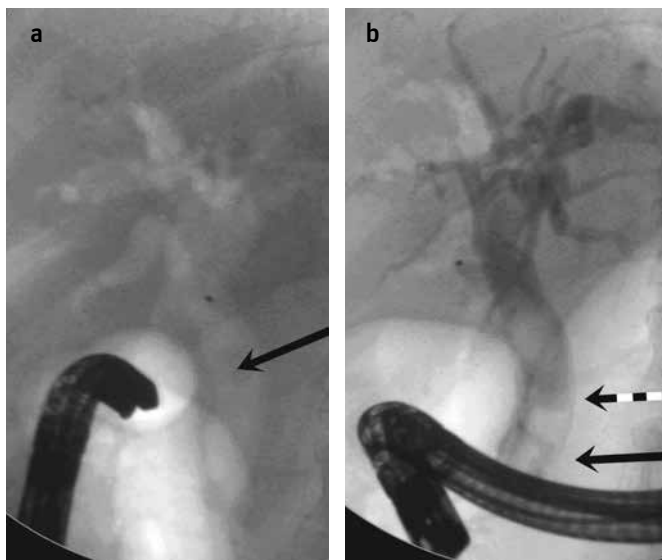
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**Figure 1. a-b.** With air cholangiogram all the biliary tree is observed, whereas the stone is not monitored (**a**). After opaque injection stones are visualized in the distal common bile duct (**b**). (arrow)



**Figure 2. a-b.** In another patient, expansion of the bile ducts and stone image is seen in the middle of the common bile duct (arrow) with air cholangiogram (a), but after contrast injection two stones becomes clear (one is angular, dotted arrow) (b).

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## REFERENCES

1. Pan JJ, Draganov PV. Adverse Reactions to Iodinated Contrast Media Administered at the Time of Endoscopic Retrograde Cholangiopancreatography (ERCP). *Inflammation & Allergy - Drug Targets* 2009; 8: 17-20.
2. Ertuğrul İ, Yüksel İ, Parlak E, et al. Risk factors for endoscopic retrograde cholangiopancreatography-related cholangitis: A prospective study. *Turk J Gastroenterol* 2009; 20: 116-21.
3. Draganov P, Cotton PB. Iodinated Contrast Sensitivity in ERCP. *Am J Gastroenterol* 2000;95:1398-1401
4. Pisello F, Geraci G, Modica G et al. Cholangitis prevention in endoscopic Klatskin tumor palliation: air cholangiography technique. *Langenbecks Arch Surg* 2009; 394: 1109-14
5. Mosca S, Secondulfo M, Defez M et al. Air Contrastography Technique for Successful Urgent ERCP in a High Risk Allergic Patient. *Am J Gastroenterol* 2001; 96: 3458-60.
6. Singh V, Singh G, Gupta V et al. Contrast-free air cholangiography-assisted unilateral plastic stenting in malignant hilar biliary obstruction. *Hepatobiliary Pancreat Dis Int* 2010; 9: 88-92.
7. Sud R, Puri R, Hussain S et al. Air cholangiogram: a new technique for biliary imaging during ERCP. *Gastrointest Endosc* 2010; 72: 204-8.