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Biliary atresia and stool: its consistency and fat content, another potentially useful clinical information

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It is difficult to make an early diagnosis of biliary atresia. An easy screening method uses the 'stool color card' for acholic stool [1]. However, unfortunately, there are several false-negative patients.

Patients with biliary atresia often have a bleeding tendency because of malabsorption of fat-soluble vitamin K. Although acholic stool is described and stool bilirubin detection is part of the diagnostic process, steatorrhea has never been discussed. Steatorrhea detection by Sudan III staining is considered to be an easy, rapid, and safe process. It is often used in the diagnosis of several conditions such as cystic fibrosis and celiac disease [2].

Sudan III stain of fecal fat was performed on a stool sample of a 31-day-old patient. Its color was recorded as green, not acholic. As can be seen in Fig. 1, numerous huge fat droplets were found, which is consistent with severe steatorrhea according to previously published criteria [3]. The patient was breast-fed and developed acholic stool within several days. A previous report stated that 10% of breast-fed babies showed low-level positive fecal fat at the age of 28 days [4]. In healthy control breast-fed babies, no or only mild steatorrhea was found (data not shown). With some cholestatic patients, severe steatorrhea was also observed (data not shown).

Human milk contains ~1 g/dl of protein, 7 g/dl of lactose, and 3.5 to 4 g/dl of fat [5]. Most of the fat consists of

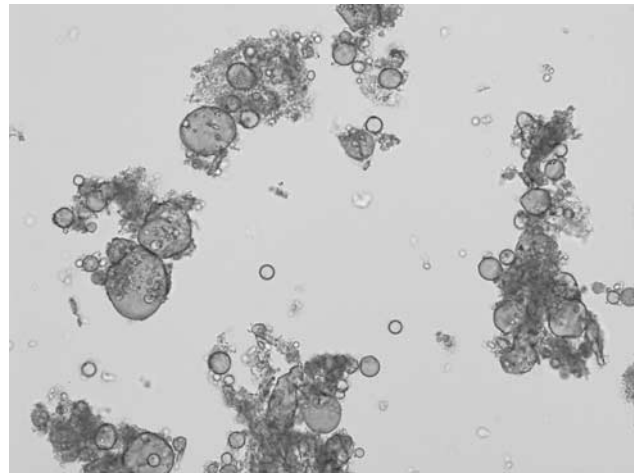


Fig. 1. Sudan III fecal fat stain of a biliary atresia patient. Massive fat droplets are seen.

triglycerides, which is solid at room temperature, forming an oil-in-water emulsion [6]. Fat comprises a significant proportion of a non-water-soluble component. Therefore, if stool contains a significant amount of fat, it is either a solid or an emulsion, which cannot be compatible with the typical watery stool of a breast-fed baby. So far, all positive samples have shown a soil-like solid consistency. With one other patient, the author initiated screening within 2 weeks of life because the stool was yellow, but with an unusual consistency, and conjugated bilirubin was borderline. Unfortunately, the fat content was not investigated.

Fecal fat content and consistency are informative, especially when its color is not acholic. This underdescribed finding may not be specific, but it could be sensitive and may provide additional data in the diagnosis process.

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Conflicts of interest

There are no conflicts of interest.

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