**Introductions:** Hepatic adenoma (HA) and focal nodular hyperplasia (FNH) are benign hepatic lesions found predominantly in women of child-bearing age. Differentiation of the two is important because HA's are often resected due to risk of hemorrhage and possible malignant transformation, while FNH require no intervention. Characterization of HA vs. FNH with extracellular gadolinium based contrast agents is often challenging because imaging characteristics during dynamic contrast imaging can be very similar, and these lesions both occur in the same patient demographic. The advent of hepatobiliary gadolinium based contrast agents offers new opportunities for characterization of HA versus FNH. Extensive experience with delayed imaging with gadobenate dimeglumine at 1-2 hours has demonstrated a general behavior of hyper-intense or iso-intense enhancement of FNH and hypo-intense behavior of HA. Gadoxetic acid (Eovist, Bayer Health Care Pharmaceuticals Inc, Wayne, NJ) is an alternative hepatobiliary gadolinium based agent which has more rapid uptake and excretion of contrast with 50% hepatic uptake and peak enhancement at approximately 20 minutes. To date, there has been a paucity of pathological-imaging correlation of HA and FNH using gadobenate acid with a total of 6 reported cases of HA and 16 cases of FNH. The purpose of this retrospective study is to perform pathological-imaging correlation of HA and FNH using gadoxetic acid-enhanced imaging at a dose of 0.05mmol/kg.

**Methods:** A retrospective study was performed after IRB approval by searching on the keywords “adenoma”, “FNH”, “focal nodular hyperplasia” on all MRI studies from July 2008 (when gadobenate acid was first used at our institution) until 10/5/2010. A total of 6 HA’s with histological correlation and 34 FNH’s (2 with histological correlation) were identified. Delayed hepatobiliary imaging used an investigational version of a 3D-SPGR T1-weighted acquisition with intermediate spectrally selective fat suppression (LAVA, GE Healthcare) that allowed the use of higher flip angles (30-45°) to maximize SNR and CNR performance. All patients were administered 0.05 mmol/kg of gadobenate acid at 2.0 ml/s and delayed phase imaging was performed at approximately 20 minutes. All imaging was re-reviewed by 2 board certified radiologists with 10 and 5 years of experience. Signal intensity ratios (SIR) were also measured as the ratio of the signal within the lesion compared to the adjacent liver that was free of vessels or large bile ducts. Lesions were characterized as hypo-intense if the SIR was <0.95, iso-intense if the lesion had a SIR from 0.95 – 1.05, and hyper-intense if the SIR>1.05. All pathological preparations were re-reviewed by a board certified pathologist with 9 years of experience.

**Results:** Figure 1 shows an example of HA on selected imaging sequences including delayed hepatobiliary imaging at approximately 20 minutes following administration of 0.05 mmol/kg of gadobenate acid. Figure 2 shows an example of FNH with the same imaging protocols and selected sequences including delayed hepatobiliary imaging. Table 1 tabulates the important imaging characteristics of all adenomas and histologically proven FNH's identified as part of this study. These results demonstrate that all adenomas were hypo-intense relative to the adjacent liver parenchyma on delayed hepatobiliary phase imaging, while FNH lesions were hyper-intense or iso-intense on delayed imaging.

**Discussion:** In this study we have described the imaging characteristics of 6 histologically proven HA's and 34 FNH's, 2 with pathological correlation. This doubles the number of gadoxetic acid-enhanced adenoma cases described in the literature. Further, at our institution we use twice the package insert dose of gadobenate acid (0.05mmol/kg), and to our knowledge these are the first pathologically proven reported cases with this dose. Our findings confirm the behavior of HA and FNH reported by other investigators at lower doses (0.025mmol/kg). SNR. Since HA is a rare lesion, continued studies are needed to increase the number of reported cases for improved confidence in these findings.

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