Gadovist® 1.0
Gadobutrol

Optimizing MRA

Gadovist® allows high-quality image acquisition of small abdominal vessels (with MRA) and organ parenchyma (with MRI) within the same examination. By achieving both a high SNR and CNR, Gadovist® can also deliver excellent image quality for supra-aortic MRA[1,2].

In addition, Gadovist®-enhanced MRA provides a less invasive alternative to DSA for indications such as cerebral arteriovenous malformations (AVMs), peripheral arterial occlusive disease, and renal artery stenosis.

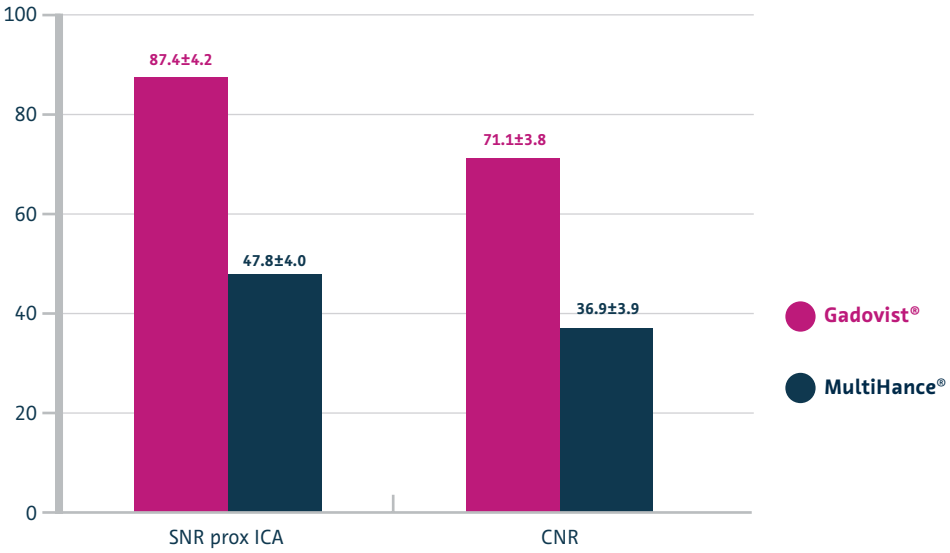
Supra-Aortic MRA

Static Imaging – Quantitative Results

In an intraindividual comparison with 0.5 molar linear MultiHance®, Gadovist® shows:

- significantly higher SNR at the level of the proximal internal carotid artery (ICA) than MultiHance® ($p < 0.05$);[2]
- significantly higher CNR than MultiHance® ($p < 0.05$)[2].

Higher SNR and CNR at the Internal Carotid Artery (ICA) Static Imaging – Subjective Image Quality[2]



Gadovist® shows significantly higher SNR and CNR compared to MultiHance®, meaning excellent image quality for confident diagnosis.

Static Imaging – Subjective Image Quality

In pairwise rankings of the image quality in static MRA ("overall impression better, equal, or worse than the given comparator?"), Gadovist® was rated:

- equal to MultiHance® ($p = 0.06$).

Dynamic Imaging – Results

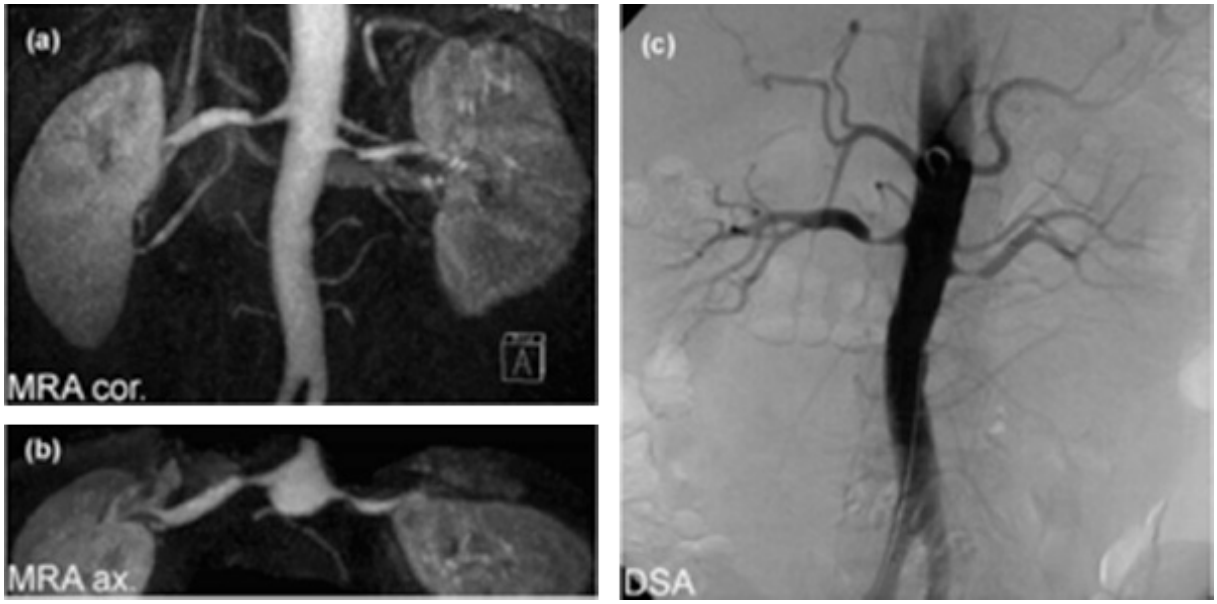
In dynamic supra-aortic MRA, Gadovist® shows higher SNR compared to MultiHance® at the investigated levels in the proximal ICA and at the level of the skull base (all $p < 0.05$).

MRA vs. DSA

The Benefits of Gadovist®-Enhanced Renal MRA

Early diagnosis of renal artery stenosis is necessary to prevent irreversible damage to renal parenchyma. An effective interventional treatment is only possible when renal artery stenosis is detected early. As an alternative to invasive DSA, non-invasive, high-spatial-resolution Gadovist®-enhanced MRA can detect hemodynamically significant renal artery stenosis with a sensitivity of 90% and specificity of 96% compared to DSA.[3]

Identifying Renal Artery Stenosis with Gadovist®-Enhanced MRA



Both MRA (a and b) and DSA (c) show slightly eccentric 70% right renal artery stenosis with marked poststenotic dilatation. Of the three renal arteries noted on the left, the main artery shows 80% stenosis; accessory left renal arteries are not stenosed.[3] Adapted from Slanina et al.

Compared to DSA, Gadovist®-enhanced MRA offers advantages for the screening of patients with a high probability of renovascular hypertension, through:

- minimal invasiveness;
- no ionizing radiation exposure.

So, in addition to enhancing the quality of the MRA image, Gadovist® can also help you improve the patient experience.

In addition, parallel acquisition techniques such as GRAPPA can further enhance image quality by significantly improving spatial resolution.

GADOVIST® 1.0 mmol/ml solution for injection. **Composition:** GADOVIST 1.0 is a clear, sterile, aqueous solution. Each ml of GADOVIST 1.0 contains 604.72 mg (1.0 mmol) of gadobutrol, 1.211 mg trometamol, 0.013 mg sodium (0.00056 mmol), and 0.513 mg calcium sodium butrol in water for injection. The pH of GADOVIST 1.0 is adjusted to between 6.6 and 8.0 with hydrochloric acid. **Indications:** GADOVIST 1.0 (gadobutrol) is a medicinal product for diagnostic use only. GADOVIST 1.0 (gadobutrol) is indicated in adults and children of all ages including term newborns for: contrast enhancement during cranial and spinal MRI investigations and for contrast-enhanced magnetic resonance angiography (CE-MRA); contrast enhanced MRI of the breast to assess the presence and extent of malignant breast disease, and MRI of the kidney. GADOVIST 1.0 is particularly suited for cases where the exclusion or demonstration of additional pathology may influence the choice of therapy or patient management, for detection of very small lesions and for visualization of tumours that do not readily take up contrast media. GADOVIST 1.0 is also suited for perfusion studies for the diagnosis of stroke, detection of focal cerebral ischemia and tumor perfusion. **Contraindications:** GADOVIST 1.0 should not be administered to patients who have experienced a life-threatening reaction to GADOVIST 1.0 previously. **Serious warnings and precautions for use:** Gadolinium-based contrast agents (GBCAs) increase the risk of Nephrogenic Systemic Fibrosis (NSF) in patients with: chronic severe renal insufficiency (glomerular filtration rate <30 mL/min/1.73m2), or acute renal failure / acute kidney injury. In these patients, avoid use of GBCAs unless the diagnostic information is essential and not available with noncontrast-enhanced magnetic resonance imaging (MRI). NSF may result in fatal or debilitating systemic fibrosis affecting the skin, muscle, and internal organs. Screen all patients for renal dysfunction by obtaining a history and/or laboratory tests. When administering a GBCA, do not exceed the recommended dose and allow a sufficient period of time for elimination of the agent from the body prior to any readministration. **Adverse rections:** Patients with a history of previous reaction to contrast media, allergic disorders or bronchial asthma suffer more frequently from hypersensitivity reactions than others. As with other contrast media, delayed allergoid reactions occurring hours or days after administration have been observed, though rarely. Anaphylactoid reactions may occur. Transient sensations of taste or smell perversion may occur during or immediately after injection of GADOVIST 1.0.

Literature:

1. Gadovist® Product Monograph. September 30, 2021.
2. Kramer JH et al. “Dynamic and Static Magnetic Resonance Angiography of the Supra-aortic Vessels at 3.0 T. Intraindividual Comparison of Gadobutrol, Gadobenate Dimeglumine, and Gadoterate Meglumine at Equimolar Dose.” *Invest Radiol 48*, no. 3 (March 2013): 121-128, doi.org/10.1097/rli.0b013e31827752b4.
3. Slanina M et al. “Contrast-enhanced MR angiography utilizing parallel acquisition techniques in renal artery stenosis detection.” *Eur J Radiol 75*, no. 1 (July 2010): E46-E50, doi.org/10.1016/j.ejrad.2009.07.010.

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