

LSU Health Science Center

LSU Health Digital Scholar

Medical Research Day

2022 Medical Research Day Posters

Oct 13th, 12:00 AM

Validating Contrast-Enhanced Infarct Characterization of a Novel Manganese-based Positive Contrast Agent in a Porcine Model of Myocardial Ischemia Reperfusion

Benjamin Bonner

LSU Health Sciences Center- New Orleans

Salva Yurista

Jaume Coll-Front

Shi Chen

Robert Eder

See next page for additional authors

Follow this and additional works at: <https://digitalscholar.lsuhscc.edu/sommrd>



Part of the [Cardiology Commons](#)

Recommended Citation

Bonner, Benjamin; Yurista, Salva; Coll-Front, Jaume; Chen, Shi; Eder, Robert; Foster, Anna; Nguyen, Khoi; Caravan, Peter; Gale, Eric; and Nguyen, Christopher, "Validating Contrast-Enhanced Infarct Characterization of a Novel Manganese-based Positive Contrast Agent in a Porcine Model of Myocardial Ischemia Reperfusion" (2022). *Medical Research Day*. 90.

<https://digitalscholar.lsuhscc.edu/sommrd/2022MRD/Posters/90>

This Event is brought to you for free and open access by the School of Medicine at LSU Health Digital Scholar. It has been accepted for inclusion in Medical Research Day by an authorized administrator of LSU Health Digital Scholar. For more information, please contact aolini@lsuhscc.edu.

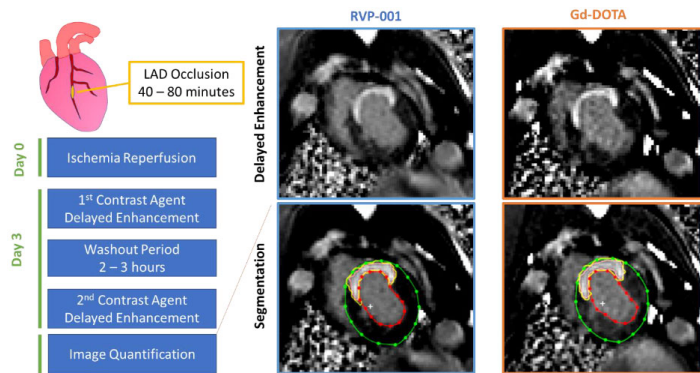
Presenter Information

Benjamin Bonner, Salva Yurista, Jaume Coll-Front, Shi Chen, Robert Eder, Anna Foster, Khoi Nguyen, Peter Caravan, Eric Gale, and Christopher Nguyen

Contrast-enhanced cardiac MRI with a manganese-based alternative to gadolinium for tissue characterization of acute myocardial infarction

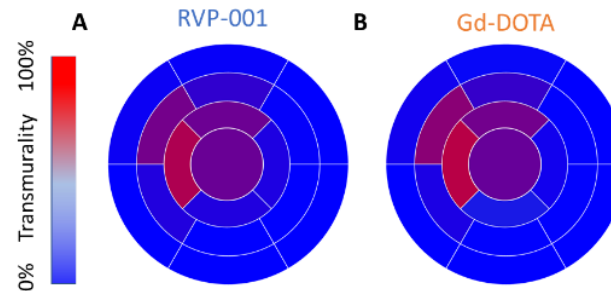
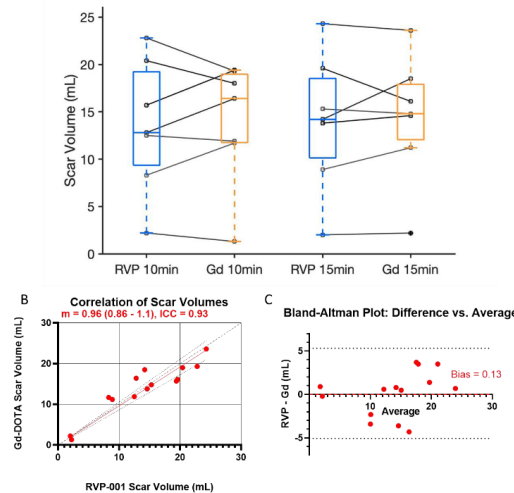
Benjamin Bonner, Salva Yurista, Jaume Coll-Front, Shi Chen, Robert Eder, Anna Foster, Khoi Nguyen, Peter Caravan, Eric Gale, Christopher Nguyen

Methodology

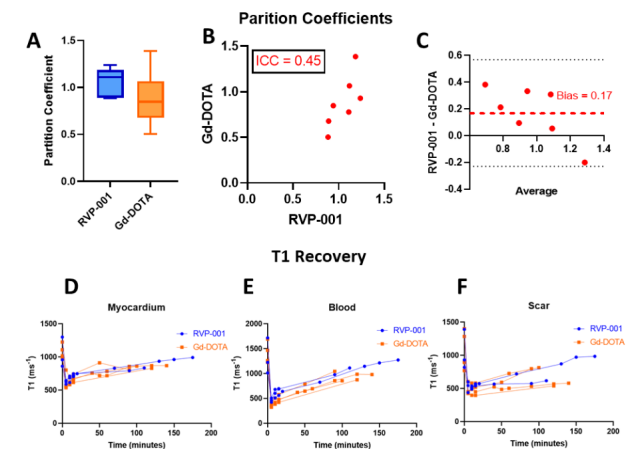


- Late gadolinium enhancement (LGE) is the gold standard in cardiac magnetic resonance (CMR) imaging to visualize and quantify myocardial infarction (MI) severity
- MI remains the major cause of heart failure with reduced ejection fraction, and the prevalence of MI-induced heart failure (HF) has increased steadily over the past five decades.
- The utility of contrast-enhanced CMR has recently been validated against existing standards of care such as invasive coronary artery catheterization in landmark trials such as the MR-INFORM study
- Gadolinium based contrast agents (GBCAs) are contraindicated in patients with a glomerular filtration rate below 30mL/min/1.73m
- [Mn(PyC3A)(H2O)]-, here referred to as RVP-001, has been proposed as a candidate alternative to GBCAs and has been demonstrated to exhibit similar pharmacokinetics and relaxivity to conventional gadolinium agents.

Quantification of Myocardial Injury



Contrast-tissue T1 modification



Conclusion

- This is the first study to validate the in-vivo performance of a manganese-based alternative (RVP-001) to GBCAs for contrast enhanced cardiac MRI of acute myocardial infarction.
- In a MI porcine model, robust performance of RVP-001 demonstrated comparable infarct volumes, transmurality, and post-contrast T1 relaxometry with minimal bias and no significant differences to conventional gadolinium-based measurements.
- Future studies will include chronic and diffuse cardiovascular insults as well as rigorous clinical validation in patients.