Gadolinium retention and clearance after administration of macrocyclic MR contrast agents to rats: reply to Bussi et al.

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Dear Editors,

We would like to thank the Bracco group for the clarification in their letter to the editor [1]. We do acknowledge that there was an error in our manuscript [2] when interpreting the results of their study [3]. The article by Bussi et al. [3] showed significantly lower levels of gadolinium retention in all parenchymal organs following cumulative administration of ProHance (gadoteridol; Bracco Imaging, Milan, Italy) when compared to Dotarem (gadoterate meglumine; Guerbet, Villepinte, France) and Gadovist (gadobutrol; Bayer Pharma, Berlin, Germany) after a 28-day recovery period following multiple administrations of these three agents. This is contrary to our report that the gadolinium levels were lower with Dotarem.

A 2019 article by Jost et al. [4] evaluated rats that received multiple administrations of one of the three macrocyclic agents on the market (ProHance, Dotarem and Gadovist) after 5, 26 and 52 weeks following administration. This study demonstrated that after 5 weeks, gadolinium concentrations in the

cerebrum, cerebellum and brainstem were higher with Dotarem when compared to ProHance, similar to the study by Bussi et al. [3]. However, after 26 and 52 weeks, the measured levels of Dotarem in the cerebellum were slightly lower than those of Gadovist and ProHance. Therefore, while additional research is needed in comparing the tissue retention rates of the different macrocyclic agents, it remains plausible that the higher chemical stability of the ionic agent Dotarem contributes to a greater long-term elimination rate when compared to the other nonionic macrocyclic gadolinium-based contrast agents on the market.

Compliance with ethical standards

Conflicts of interest None

References

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