Diagnostic performance of susceptibility-weighted magnetic resonance imaging for the detection of calcifications:
A systematic review and meta-analysis

Lisa Adams*, Keno Bressem, Sarah Maria Böker, Yi-Na Yvonne Bender, Dominik Nörenberg, Bernd Hamm, and Marcus Richard Makowski

Email-address for correspondence: lisa.adams@charite.de

Supplementary Information:

Supplementary Information Table S1. PRISMA checklist

Supplementary Information Table S2. Results – Studies which were excluded at the level of full-text search.

Supplementary Information
Table S1. PRISMA checklist

Section/topic		Checklist item	Reported on page
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	3,4
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	PROSPERO,5
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	5,6
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	5,6
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	5

Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	5,6
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	6
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	3,4,6
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	QUADAS-2,7
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	None
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	7,8
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	8
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	8
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	Figure 1,7
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Table 1,9
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Figure 2, 9,10
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	Figures 3, 10

Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	10
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	9,10
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	11
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	12
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	14,15
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	15
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	No funding.

Supplementary Information Table S2. Results. Studies which were excluded at the level of full-text search.

Study	Title	Reasons for exclusion on full-text level
Adams et al. **(37)**	Assessment of intracranial meningioma-associated calcifications using susceptibility-weighted MRI	Overlapping patient population with the study on pineal gland calcifications (8), which was selected as it was more recent and included a larger patient sample
Bender et al.**(49)**	MRI for the detection of calcific features of vertebral haemangioma	Use of a mixed reference standard of radiographs/CT instead of CT as the reference standard
Gumus et al. **(50)**	Susceptibility-Based Differentiation of Intracranial Calcification and Hemorrhage in Pediatric Patients. Journal of Child Neurology	Application of the reference standard CT in only 2 cases
Nörenberg et al.**(51)**	Diagnosis of Calcific Tendonitis of the Rotator Cuff by Using Susceptibility-weighted MR Imaging	Use of radiographs instead of CT as the reference standard
Rodjan et al. **(52)**	Detection of calcifications in retinoblastoma using gradient-echo MR imaging sequences: Comparative study between in vivo MR imaging and ex vivo high-resolution CT	Use of SW-MRI in only five out of 22 cases (inclusion criteria: more than 5 patients)
Sahin et al. **(53)**	Fahr disease: use of susceptibility-weighted imaging for diagnostic dilemma with magnetic resonance imaging.	Case study/report
Wagner et al. **(54)**	Susceptibility-Weighted Imaging for Calcification in Cockayne Syndrome.	Case study/report, no abstract available on Pubmed