Dear Authors,

First, I commend you on your diligent efforts in this research endeavor. Your willingness to share this study with the neuroradiological community is much appreciated.

Summary.
This study has embarked on contrasting a range of clinical and imaging features between Meningiomas and SFTs in what I understand as a retrospective, observational, cross-sectional design. In a subanalysis, there's a differentiation between grades 2 and 3 of SFTs, introducing the added variables of bone and/or venous sinus invasion. Several variables were found to produce statistically significant p-values. Some even demonstrated robust AUC-ROCs exceeding 0.7 for the Meningioma vs. SFT comparison. The T1 signal ratio between the tumor and the normal cortex seems to stand out in significance. This ratio, gauged in what I understand as a quantitative/semi-quantitative manner, is touted as innovative. In the differentiation between grade 2 and 3 SFTs, only the additional variable related to bone/venous sinus invasion was observed to have significant p-values.

The relevance of the clinical question, given its potential unresolved nature in current practice, is commendable. Considering the rarity of SFTs, the sample size employed in this study is noteworthy. Furthermore, the reliance on data that is readily accessible in clinical settings, without the need for extensive data processing, amplifies the study's real-world applicability. The straightforward quantification of the T1 ratio adds a layer of practicality that could be directly beneficial in clinical scenarios.

However, alongside these strengths, there are several concerns: the paper's structure and rationales need improvement, and it leaves several questions unanswered. The quantitative evaluation of T1 and T2 signaling lacks clarity. Essential sub-analyses ensuring reproducibility are missing, and the methodology behind the quantification and the selection of features does not appear to be well-rationalized, among other issues.

Detailed comments are provided below.

I trust these constructive suggestions will aid in enhancing your research. Thank you for your efforts.

Title.
“Tumor parenchyma signaling in T1-weighted imaging" may not resonate with standard neuroradiology nomenclature, particularly in the context of Neuro-oncology. A more descriptive terminology like “Quantitative Tumor/Cortex T1 Signal Ratio” could be more intuitive. Also,

given that multiple features are evaluated in the study, the title seems to place undue emphasis solely on the T1 signal aspect. A more inclusive and descriptive title would better represent the study's scope and intent. Consider refining the title to ensure clarity, comprehensiveness, and engagement.

Abstract.
Consider to avoid using the abbreviation "MA" for meningioma; it's non-standard. Consider to use the full term for clarity.

The study's stated objective suggests a focus on enhancing preoperative diagnostic accuracy for SFTs. However, the methodology seems more centered on describing distinguishing features, indicating a more descriptive intent than a diagnostic accuracy one.

While abstracts should be concise, the methods section could benefit from a brief mention of the key variables evaluated to provide a clearer snapshot of the study's approach. Also, Specify the study design.

In the results, note that a high AUC-ROC value doesn't necessarily equate to the highest accuracy.

The term "positive-effect" in the context of cranial or venous sinus invasion is vague. If it's meant to suggest a correlation with grade 3 SFT, it should be more explicitly stated.
In the conclusion, be cautious with terms like "highest predictive accuracy" and "predictor," as the study's design leans more towards descriptive differentiation than prediction.

Introduction.
A detailed overview of imaging's role in differentiating between the tumors, especially in terms of T1 and T2 signals and the other variables under evaluation, is missing. This is crucial given the study's emphasis on imaging-based differentiation.

Claims about SFTs' invasive nature, rich blood supply, and associated risks must be more thoroughly backed by existing literature. There may be doubts about the clarity of these differences in the clinical setting, especially when comparing to high-grade meningiomas.
The objective of the study should occupy the introduction's final paragraph. Introducing results, such as the number of participants, in this section is inappropriate and detracts from the primary focus. The differentiation of grade 2 and 3 SFTs also requires acknowledgment and inclusion.

Methods.
Specify the study design in detail.

Clarify the reasoning behind the 1:4 matching of Meningiomas.

Define "complete imaging data."

List the essential sequences required for patient inclusion (instead of complete imaging data). Regarding various MR Scans: Were there discrepancies between patients scanned on different machines (Philips vs. GE)? Specify the distribution, detailing the number of patients and tumor types for each scanner. Also, address potential differences in quantitative features like the T1 and T2 ratios between scanners. A subanalysis on this aspect would enhance transparency, reproducibility, and generalizability.

The rationale for subanalyzing grade in SFT but not in Meningiomas is missing. Please explain and justify this choice.

The image analysis process by the two radiologists lacks clarity. Was consensus the primary method for every evaluation? Did the radiologists initially assess the images independently, then reach a consensus? How were discrepancies resolved? What was the inter-reader agreement during independent reviews?

Clarify the rationale for selecting specific imaging variables. Why were certain features chosen for evaluation over others? Grounding these choices in the introduction, by highlighting key imaging features for differentiation, would be beneficial. It's crucial to explain why certain features are evaluated and others are not.

The methodology for selecting ROIs for T1 and T2 ratios needs elaboration. How was the area with the highest signal intensity chosen – visually or automatically? Detail the process of drawing the tumor ROIs, specifying size and whether a consistent size was used across evaluations. Without this information, the study's reproducibility is compromised.

When mentioning the use of tools in the PACS, specify which software and tools were utilized. When averaging the six measures to obtain the final TCSR value, it would be insightful to include data on the variation between these six measures and any discrepancies between readers. This would further assess reproducibility, generalizability, and the potential influence of operator bias.

The rationale for using a binary logistic regression model to assess the impact of "intracranial" (likely meant bone-cranial invasion) or venous sinus invasion on differentiating between grade 2

and 3 is unclear. Why not treat them just as two additional variables in the list? This choice needs further explanation and justification.

Elaborate on the methodology for assessing bone invasion. Furthermore, why wasn't the specific type of bone invasion considered when differentiating between Meningioma and SFT? Notably, meningiomas often present with hyperostosis, while SFTs are associated with bone lysis. The absence of calcification evaluation is noticeable, given its frequent occurrence in meningiomas and rarity in SFTs. Imaging of skull vault tumors in adults. Insights Imaging. 2020 Feb 13;11(1):23. doi: 10.1186/s13244-019-0820-9. PMID: 32056014; PMCID: PMC7018895.

Results.
The inclusion of a participants flow-chart would enhance clarity, allowing readers to easily follow the patient selection process. Information on excluded patients and the reasons for exclusion should be transparently presented.

Consistency in the order of features across tables will aid in reader comprehension and data interpretation.

While the SFT subanalysis provides grading details, incorporating tumor grades within the primary clinical features for both SFT and Meningioma would be beneficial for a holistic view. The inclusion of the "Pathological results" section seems extraneous and does not directly contribute to the study's primary objectives. Assessing its relevance and considering its removal or better integration into the context of the study might streamline the content.

Specific quantitative values for the T1 and T2 ratios are conspicuously absent. If they're being evaluated as continuous quantitative values, the specific values and summarizing measures should be shared. If they're dichotomized (e.g., > or <1 for T1 and > or <1.1 for T2), the basis for these thresholds is unclear. A more detailed exposition on the chosen thresholds is essential. If set arbitrarily, it undermines the purported quantitative nature of this analysis. It would be more statistically sound to evaluate the ratios as continuous variables and determine the optimal threshold through analysis rather than making assumptions. Without this clarification, the metric might appear to be more akin to a visual assessment (e.g., whether the tumor signal is brighter than the cortex) rather than a true quantitative measure. Addressing these points is crucial for the study's validity and clarity.

Discussion.
The text from the beginning to “. In this study…,” seem misplaced in the discussion. It would better fit within the introduction.

The claim that TCSR>1 serves as a reference standard is puzzling. TCSR>1 appears to be a studied variable, not an established reference standard.

It is stated that while previous studies indicate SFTs have a low T1 signal, this study suggests the opposite. This deviation warrants a discussion. A clarification on why this study's quantitative approach might be more insightful than visual methods would be valuable.

The disproportionate emphasis on the yin-yang sign compared to other imaging features, some of which yielded better results, is unclear. A balanced review would be more fitting.

Terminology inconsistencies, especially concerning cranial bone invasion (referred to variably as "destruction" or "intracranial invasion"), can confuse readers. A unified terminology is essential for clarity.

Conclusion.
The claim that the study is useful in improving the precision of preoperative diagnosis is not adequate conclusion. Has this been explicitly demonstrated within the study?

The introduction of TCSR>1.0 in T1WI as a novel sign should be highlighted earlier, especially if it's central to the paper's conclusions. If this is a novel sign, its importance should be emphasized throughout, not just at the end.

The authors seem to be describing differences without explicitly assessing diagnostic efficacy.

Figures.
The figure/ figures illustrating the differences between Meningioma and SFT could be more comprehensive. Several imaging features with significant p-values and acceptable to high AUC-ROCs are overlooked. In Figure 1, the term “mode patterns” may be unfamiliar to readers, especially since it isn't addressed elsewhere in the text. Its introduction without context here seems inappropriate.