Peer-Review

Chalasani, Suhas. 2025. “Advanced Imaging Techniques in the Diagnosis of Atypical Teratoid Rhabdoid Tumor in Pediatric Patients.” *Journal of High School Science* 9 (4): 230–48. https://doi.org/10.64336/001c.151309

This is a well researched, written and presented article. However, it only presents information already available in the public domain and does not hence meet the Journal’s Review paper requirements seen at : https://jhss.scholasticahq.com/for-authors, types of manuscripts, review papers.

The author needs to incorporate content or ideas not yet available in the public domain. For example, if MRI scans - at least for preterm babies - were mandated to add (and insurance companies were mandated to cover) diffusion weights to the standard MRI spin-echo sequence; the MRI information would also contain DWI information. This could be invaluable in the early diagnosis of AT/RT, at least in pre-term babies. This is even more important because DWI information cannot be added to images that have already been acquired; acquisition has to occur while an MRI is being scanned.

I do not think this is yet standard or best-practice.

In addition, different modalities can be inferred using AI (GAN). For example, T1, T2 and T2-Flair can be inferred from a knowledge of one (see reference). Similarly, you can make the case that DWI and/or DTI and/or PWI could be inferred from regular standard spin-echo MRI scans. This could prove very useful to radiologists and physicians limited by equipment, resources or patient characteristics.

These recommendation will make the paper confirm to the expectations of a review manuscript and can then be reviewed further. The author is free to make other recommendation(s). Please also include a section on ‘emerging therapeutics’ such as gene-therapy and epigenetic therapy (see references below) in your manuscript.

https://doi.org/10.1038/s41598-020-60520-6
https://doi.org/10.3978/j.issn.2223-4292.2015.03.01
https://doi.org/10.2147/IJN.S458323
https://doi.org/10.3390/biomedicines10030650
https://www.mskcc.org/news/epigenetic-combination-therapy-could-overcome-treatment-resistance-in-epithelioid-sarcomas-and-rhabdoid-tumors
https://doi.org/10.1158/2159-8290.CD-23-0110
https://doi.org/10.1038/s41467-023-43498-3
https://www.preprints.org/manuscript/202504.0582/

Dear Reviewer,

Thank you for looking over my research paper and providing feedback.

“The author needs to incorporate content or ideas not yet available in the public domain”

From the information that is already present in the research paper, I added more commentary, connecting ideas that explain why each imaging modality should be used and how each one can add specific information that can help detect and determine early recurrence for pediatric with AT/RT

“Different modalities can be inferred using AI (GAN)”

I added a section about AI based inferences of imaging modalities that includes how AI imaging can address some of the potential limitations of advanced imaging. Additionally, I talked about the use of GANS to transform standard and advanced imaging sequences. I mentioned how AI can reduce

scan times through the implementation of convolutional neural networks (CNNs) and graph neural networks (GNNs). Finally I talked about limitations of AI in MRI scans and potential areas for future research to address these limitations.

“Please also include a section on ‘emerging therapeutics’ such as gene-therapy and epigenetic therapy in your manuscript.”

I included a section in the paper titled emerging therapeutics and gene based approaches to talk about the therapeutic benefits of gene therapy for pediatrics with AT/RT. I also mentioned the possible limitations of gene therapy and added areas of research to address these limitations.

Thank you for your time, Suhas Chalasani

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Thank you for addressing my comments. The manuscript is significantly improved - but it can do even better. Please see comments below.

1.A thorough literature search has not been performed. See selected references:
https://discover.nci.nih.gov/publications/2022/2022-10-11_McDermott_Aty_Ter_Rhabdoid.pdf
This manuscript used AI to discover a drug, not to enhance diagnostic inforamation. Still relevant to your manuscript.
Nadenlla RajamohanReddy, G Muneeswari, (2025) Multimodal Detection and Prognostic Modeling of Atypical Teratoid Rhabdoid Tumors Using Machine Learning and Time Series Analysis. Journal of Neonatal Surgery, 14 (20s), 790-817.
https://doi.org/10.1038/s41467-025-57078-0
https://doi.org/10.1093/noajnl/vdae162

2.You mention that there are limited datasets available for training AI on pediatric ATRT. I would like you to propose the creation of synthetic datasets by AI, to get around the small actual datasets that exist. Type “synthetic MRI dataset for atypical tetroid rhabdoid tumors” into ChatGPT for starters.

3.I would also like you to propose gettting AI to examine differences between adult and pediatric MRI or other diagnostic scans (as training data) and have it develop an algorithm that would ingest an adult ATRT scan and output its ‘pediatric version’. This is a possibility that has not yet been considered as well. If this can be done accurately, many more pediatric scan will then be available (in addition to the synthetic ones created in point 3) for the AI to train on.

4.If different brain tumors (including ATRT) are ultimately going to use the same chemotherapeutic agents and/or doses of radiotherapy to ablate the tumor as a downstream treatment commonality; then my question is : Why is it important to distinguish ATRT from other brain tumors iin the first place? So long as any diagnostic method can pick out a tumor (any type of tumor), the treatment is the same, is it not? Please discuss in the manuscript.

5.Please adhere to the Journal’s formatting guidelines when submitting your manuscript. Please include Tables in the text (as actually formatted tables, not JPEGs). Figures should be submitted as separate individual JPEGs of sufficient resolution. Do NOT include legends in Figures, instead submit them in a separate word file. Please include refrences as numbered sequentially in the text body in curved brackets, followed by a references section at the end of the manuscript. Submit the manuscript as a word or equivalent file, with Times New Roman 12 font, single column. Please write in past perfect tense whereever possible. Please vist the Journal’s webpage for details.
I look forward to your revised paper.

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Reviewer Response Table

Dear Reviewer,

Thank you for your feedback and related resources. I have conducted additional research and addressed all of your comments. Please find my responses below.

Question Text	**Response**
A thorough literature search has not been performed. See selected references	I have included the recommended references as part of my AI section to strengthen AI predictions for the treatment and diagnosis of AT/RT: • *Research has shown that AI has the potential to predict certain traits that would be effective against AT/RT that have mutations in the SMARCB1 or SMARCA4 genes. By using large-scale data sets, such as gene expression and mutations, along with drug response datasets, the AI predicted that drug LP-184 would be effective against AT/RT. This was validated by using a culture of mice and demonstrated a regression in AT/RT of that sample (60). Although this study has not yet been demonstrated in humans, it still shows the value of AI predictions to not only identify tumors, but also to identify potential treatments for AT/RT*
I would like you to propose the creation of synthetic datasets by AI, to get around the small actual datasets that exist.	In my AI section, I have proposed the creation of synthetic datasets to address the lack of pediatric datasets for AI diagnosis of AT/RT • *Review papers have advocated for the creation of synthetic data sets to train AI and create a potential solution to the lack of AI datasets. A benefit to this approach is that AI data sets can overcome the ethical concerns and logistical hurdles that come with gathering any AT/RT data for AI*
I would also like you to propose getting AI to examine differences between adult and pediatric MRI or other diagnostic scans (as training data) and have it develop an algorithm that would ingest an adult ATRT scan and output its 'pediatric version	As part of the AI section, I added information about how researchers can utilize adult data to create a pediatric data version from it • *More synthetic data sets can also be created by training AI to identify differences between pediatric and adult MRI data, and from there be given an adult MRI brain scan and create a pediatric version from it. This has been explored in a study where AI has been utilized to transform images across adults and pediatrics. The paper demonstrates potential for AI given adult MRI scans to mimic anatomy to generate more pediatric data (64)*
Why is it important to distinguish ATRT from other brain tumors in the first place? So long as any diagnostic method can pick out a tumor (any type of tumor), the treatment is the same, is it not?	In my introduction section, I specified the importance of diagnosis AT/RT specifically because of its mutation in the SMARCB1 gene and its lethality rate in pediatrics, so that treatment can be timely and effective • *AT/RT represents a subsection of a group of tumors known as rhabdoid tumors. Rhabdoid tumors are aggressive*

	tumors that are commonly seen in pediatric patients and are distinguished by mutations in the tumor suppressor gene SMARCB1/INI1/hSNF5 (9). Similarly, AT/RT is correlated to a loss of SMARCB1 located on chromosome 22q. It is less frequently related to the deletion of the SMARCA4 gene, which is also a tumor suppressor gene that is involved in the remodeling of chromatin. Disruption to the chromatin remodeling factors is known to change the transcription process into a cancerous state (6). AT/RT can originate anywhere in the Central Nervous System (CNS) and are most seen in the cerebrum and cerebellum. Because AT/RT affects different genes when compared to similar tumors, treatment for AT/RT would require a specific regiment for pediatrics with the tumor, especially when focusing on epigenetic therapy. Failure to appropriately diagnose AT/RT has been shown to result in significantly worse outcome for patients (10)

Thank you for addressing my concerns. The references will need to be corrected. They should be in APA format. Pay particular attention to formatting (commas, Journal name, Authors (need first 6, for more than 6, need first 6 followed by an et al., Volume, Issue, pages, and a DOI link). Please follow formatting for book and chapters in book per APA. References need to be manually numbered, do not use the software's authomated numbering for this.
Failure to precisely follow format for references will lead to multiple 'revise and resubmit' requests and a long delay in the processing of your manuscript.

Reviewer Response Table

Dear Reviewer,

Thank you for your guidance, I have updated the references section with proper APA format. Please find my responses below.

Question Text	**Response**
The references will need to be corrected. They should be in APA format. Pay particular attention to formatting (commas, Journal name, Authors (need first 6, for more than 6, need first 6 followed by an et al., Volume, Issue, pages, and a DOI link). Please follow formatting for book and chapters in book per APA. References need to be manually numbered, do not use the software's automated numbering for this.	I have followed the recommended format for the references section and have updated all the references. For articles without a functional DOI, I have included the official journal URL in accordance with APA standards. All references have also been manually numbered using words, as requested.

Thank you for addressing my comments. Accepted.