

## Peer Review File

Article Information: <http://dx.doi.org/10.21037/tp-20-399>.

**Reviewer A**

**Comments to the authors:**

**1. Dear authors,**

**Congratulations on your manuscript. It is very well written and easy to follow. Definitely a very useful tool for trainees of different specialties that have access to cranial ultrasonography. You were able to incorporate nicely, the different aspects of cranial ultrasound (CUS) imaging, from imaging technique, including terminology, advantages and use of the different probes, main indications of the imaging modality, and have provided excellent number of images and descriptions, allowing for the reader to learn and familiarize with the imaging technique, the normal sonographic appearance of the brain, variants and pathologic entities.**

Thank you very much.

**2. Minor comments/editions**

**Please read below minor suggestions on editions.**

**Line 29: I would suggest changing the word “cheap” for inexpensive.**

Thank you, we have changed it.

**Line 30: instead of multiple times: suggest using “as frequently as needed”**

Thank you, we have changed it.

**Line 34 and 57: you may use word: systematic, instead of standardized**

Thank you, we have changed it.

**Line 35: add word intracranial**

Thank you, done.

**Line 37: add “the” to peritrigonal**

Thank you, done.

**Line 52: use only CUS since was used already described in line 50.**

Thank you, done.

**Line 52: add to “and monitor” hydrocephalous**

Thank you, done.

**Line 53: use inexpensive instead of cheap**

Thank you, changed.

**Line 127: I would add a sentence like: “although in the premature infants due to their small heads and wide fontanelles a complete set of high resolution images images of the brain can be obtained using a linear probe, similar to the convex probe protocol.**

Thank you, we have added the sentence.

**Line 141: remove words “try to” and remove “do not press” but at at the end of skin in Line 143: avoiding compression.**

Thank you, we have modified the text as suggested.

**Line 169: use word echogenic instead of marked**

Thank you, we have changed marked for hyperechoic.

**Line 177: use word view instead of section**

Thank you, we have changed it.

**Line 180: change the (figure 2b) to after word views for consistency with line 177.**

Thank you, done.

**Line 184: for consistency with the upper lines, add after word left “views: these” and remove word “images”. Change the (figure 2c) after views so it reads as follows: “left views (figure 2c): these”**

Thank you, we have modified this.

**Line 196: correct word and between color and pulsed**

Thank you, done.

**Line 210: add “and after birth” after word pregnancy**

Thank you, done.

**Line 217: add a comma after suspected**

Thank you, added.

**Line 229: Add period after pathologies, remove but and upper case Nowadays**

Thank you, changed.

**Line 230: add a reference for LSV.**

Thank you, added.

**Line 235: remove frontal bossing-as can be seen with other pathologic entities**

Thank you, we have removed it.

**Line 243: add cortical after subarachnoid**

Thank you added.

**Line 247: add but may persist in older age.**

Thank you, added.

**Line 253: change period for comma, remove they, add word “and”**

Thank you, we have changed it.

**Line 254: keep it in line 254, not as separate paragraph.**

Thank you, done.

**Line 255: lower case word “figure” to be consistent**

Thank you, changed.

**Line 263: add fluid filled after midline.**

Thank you, added.

**Line 284: after finding, add a comma and the last words of sentence “without clinical significance” here. Add period after word abnormalities.**

Thank you, we have changed it.

**Line 308-309: you may want to review a recent article for recommendations on Imaging: Routine Neuroimaging of the Preterm Brain by Ivan L. Hand, Renée A. Shellhaas, Sarah S. Milla, COMMITTEE ON FETUS AND NEWBORN, SECTION ON NEUROLOGY, SECTION ON RADIOLOGY**

**Pediatrics Oct 2020, e2020029082; DOI: 10.1542/peds.2020-029082.**

Thank you, we have reviewed this article, added to the references and modified the text accordingly.

**Line 331: add word “fan-shaped” after “echogenic”-I find for our trainees is easier to visualize the image with this description. I would remove caudothalamic groove and instead mentioned adjacent to the site of IVH, usually the higher grades (although can occur with any grade)-to not to suggest only occurs in the CTG.**

Thank you, we have modified it accordingly.

**Line 333: add word “and hemorrhage” after ischemia.**

Thank you, done.

**Line 333: add word hemorrhagic after white matter.**

Thank you, added.

**Line 339: change word “although” instead of “is”, remove “and”, change word more often for “may be seen” in term neonates**

Thank you, changed.

**Line 341: add genetic conditions**

Thank you, added.

**Line 347: add that cerebellar hemorrhages <3 mm are missed with mastoid views and linear probes-or state that hemorrhages >4mm are seen with mastoid views and linear probe (add ref).**

Thank you, we have added this teaching point and the corresponding reference.

**Line 352: and genetic disorders.**

Thank you, added.

**Line 360: change for “may help”**

Thank you, changed.

**Line 373: remove “of asymmetric”**

Thank you, we have removed it.

**Line 392: change after changes for “volume loss and hypoechogenicities” instead of and gliosis**

Thank you, changed.

**Line 393: would leave it as “affected” instead of watershed**

Thank you, we have changed it.

**Lines 396 to 401- consider minor revisions in sentences, since seemed redundant or overlapping.**

Thank you for the comment, but we do not appreciate the redundancy in these sentences.

**Line 403: add after word cases “and may be difficult to see with CUS”.**

Thank you, we have added this.

**Line 440: add after dilation: “guide timing for potential management” and “to assess” prior to position.**

Thank you, added.

**Line 483: add to assess for metastasis after precisely.**

Thank you for the comment, but we do not think necessary this comment.

**Line 515: Change for: “Use a systematic technique and standardized report”**

Thank you, changed.

**Line 526: instead of “many times” use word repeatedly**

Thank you, changed.

**Figure 1e, f. perhaps you can find a more symmetric image or with less artifact, respectively. Make sure for some images that the resolution is appropriate or substitute for one w better quality.**

Thank you, we have changed them.

**Figure 8a also shows nicely a CSP**

Thank you, we have added it.

**Description of Figure 15, would add word in between brackets (formerly grade 4)**

Thank you, added.

**Figure 16 the legend is mislabelled for 16a-and image 16 b is missing-but mentioned in the description.**

Thank you, we have corrected this.

## **Reviewer B**

### **Comments to the authors:**

- **Very useful article for beginners and non-pediatric radiologists that have to report brain US; I like that you provided matching matching images to the described protocol and also the fact you included a lot of great examples of pathology, some with corresponding axial imaging. A few thoughts:**
- **ABSTRACT: Needs some trimming, the expression “this article will describe” is used twice, both times followed by lengthy lists.**

Thank you, we have modified these expressions.

- **Line 84: I would say doppler technique should be “kept to a minimum” rather than “limited to a minimum”, also I would expand a little more on the “why”.**

Thank you, we have changed the sentence as suggested, but we do not want to expand explaining the thermal and non-thermal effects of ultrasound in neonates, because there is little evidence about adverse effects and we do not want to refrain the readers from using CUS.

- **Line 97: areas of abnormal echo should de “double checked”**

Thank you, we have changed it.

- **PARAMETERS: Perhaps too many details on the technical parameters?**

Thank you very much, but we think that the ones we have described are very basic, and should be included.

- **Line 136: “loads of hair” is too colloquial, would write “lots” instead.**

Thank you, we have changed it.

- **Line 159: Add the importance of this plane to visualize the CT groove, as you did in parasagittal images (line 182).**

Thank you, we have added it.

- **Line 188: These are axial views (figure 3); same for the the description of the technique. (line 189)**

Thank you for the comment, but we do not agree the view of the posterior fossa is in the coronal plane. It could be obtained in an axial plane, but would be more difficult to interpret.

- **Line 199: Suggest using “vascular origin” instead of “circulatory origin”.**

Thank you, we have changed it.

- **Line 223: The KEYS to differentiate**

Thank you, changed.

- **Lines 296/298 are redundant.**

Thank you, we agree and have excluded the paragraph.

- **Line 300: As this is oriented to beginners, suggest adding that GM hemorrhage is an entity unique to neonates.**

Thank you for the comment, but we do not think is necessary.

- **Line 315: ‘Cystic changes’ can develop**

Thank you, we have changed it.

- **Line 332: Would revise, description of grade IV GM hemorrhage is unclear.**

Thank you for the comment, but we think this definition of grade IV haemorrhage is clear and needs no further clarification.

- **Line 343: ECMO needs to have daily US screening.**

Thank you, we have changed it.

- **Line 361: Would add that CUS is very limited in SAH and CT is preferred imaging modality.**

Thank you, we have added it.

- **Line 378: decreased number of crossing fibers.**

Thank you, we have modified this.

- **Line 413: Specify what you mean by “asymmetric perfusion”**

Thank you for the comment. We have changed asymmetric for abnormal.

#### **# Reviewer C**

##### **Comments to the authors:**

##### **General comment:**

**Cranial ultrasound for beginners is an organized and well-written manuscript. It is a good and practical summary for residents, as well as for radiologists, sonographers and pediatricians on a widely used technique that frequently entails changes in the therapeutic management of patient**

**Specific comments:**

**Abstract:**

**Line 4: Please add congenital brain to malformations: “congenital brain malformations”.**

Thank you, we have added it.

**Indications of cranial ultrasound in neonates and infants:**

**Line 83: “When performing an ultrasound examination, the time and intensity of ultrasound wave exposure, especially if Doppler technique is used, should be limited to the minimum. The operator should always shorten the scan time to a reasonable minimum and perform a head ultrasound only if indicated.” Please explain why and add a reference as the safety of the technique has previously been stated.**

Thank you for the comment. We have decided to excluded that sentence, because we think that it can give the wrong impression to the reader that ultrasound is harmful for neonates.

**Parameters:**

**Line 105: “Frequency: Must be adapted to the structure evaluated”. And it must also be adapted to the age/size of the child.**

Thank you, we have added it.

**Line 116: “bottom”. Do you mean button?**

Yes, we have changed it.

**Standard coronal planes of the brain through the anterior fontanelle: Line 161: “should symmetric” should read “should be symmetric”.**

Thank you, we have modified it.

**Line 196: Doppler US: color ad pulsed Doppler: Please replace “ad” for “and”.**

Done.

**Line 202: Please replace “brain” for “cerebral”.**

Thank you, done.

**Normal variants of the brain ultrasound appearance:**

**Line 230: “...but nowadays is considered a variant”. Please provide a reference. Later in the article it is mentioned that it can be seen in Toxoplasmosis... Any differences between low grade and high grade lenticulostriate vasculopathy regarding association with other diseases/pathologic events?**

Thank you, we have added this teaching point and a reference.

**Line 269: “...normal variant in older children and adults”. Please add a reference.**

Thank you, added.

**Line 270. Please add a comment about failure to detect the cavum septum pellucidum within the 18 and 37 weeks of gestation.**

Thank you, we have added this important teaching point and added a reference.

**Line 285: I agree that choroid plexus cysts are common and that they are considered a variant in the absence of other CNS or extra-CNS anomalies and risk factors for chromosomal**

**aneuploidy. However, could you please comment on the fetuses with choroid plexus cysts and additional anomalies and the risk of chromosomal abnormalities, especially trisomy 18?**

Thank you for the comment, but this article is aimed for beginners in neonatal CUS and this point is beyond the scope of it, it is more for an article about foetal cranial ultrasound.

**Line 294: "... that may require general anesthesia or sedation". Any comments on the "feed and sleep" technique to reduce the need of general anesthesia or sedation?**

Thank you for the comment, but we think that to discuss this technique is beyond the aim of this article.

**Parenchymal haemorrhage:**

**Line 343: "... and need to have daily ultrasound screening". Please add a reference.**

Thank you, added.

**Congenital infections:**

**Line 456: Please replace "hydrancephaly" for "hydranencephaly".**

Thank you, we have replaced it.

**Solid and cystic masses:**

**Line 485: Please replace "multilayered" for "multilayered".**

Thank you, we have replaced it.

**References. Please review the references to adhere to the reference style of the journal.**

Thank you, we have reviewed them.

**Figures:**

**Fig 1b: Could you please change fig 1b for another one where the cavum septi pellucidi is better depicted? Please move the asterisk upwards so it is placed in the corpus callosum or change the symbol for an arrowhead pointing at the corpus callosum.**

Thank you for the comment, but this example is to illustrate the normal anatomy. Cavum septi pellucidi is illustrated in figures 8 and 10. We have moved up the asterisk in the corpus callosum as suggested.

**Fig 1c: Please try to change fig 1c for another one where the third ventricle is better seen.**

Thank you for the comment, but we do not think is necessary, as it is well seen in this example.

**Fig 1e: Fig 1e looks slightly oblique, could you please replace it for a more symmetric picture?**

Thank you, we have replaced it.

**Fig 2b: Please use an arrowhead to point at the caudo-thalamic groove or move the asterisk so it is not placed in the ventricle.**

Thank you for the comment, but the asterisk is adequately located in the caudo-thalamic groove in this image.

**Fig 3: Please include in the figure legend what SS means.**

Thank you, we have included it.

**Fig 9c: Would it be possible to add the location of germinal matrix cysts?**

Thank you for the comment, but there is some heterogeneity with the nomenclature of the cyst in this region and we have followed the ones described by Dr Epelman et al in their article (in the references).

**Fig. 10a: As the septi pellucidi forms the medial walls of the lateral ventricle, could you please change fig 10a for a picture where the right lateral ventricle is seen clearly separated from the CSP?**

Thank you, we have changed it.

**Fig 12: Can you please provide a better-quality picture?**

Thank you, we have changed it for another example.

**Fig 15: Please replace “grade 4 “for “formerly known as grade 4”.**

Thank you, we have replaced them.

**Fig 16b: fig 16 b is missing.**

Thank you, we have included it.

**Fig 25: Line 685: Please change “arrows” for “white arrows”.**

**Line 686: Please replace “arrows” for “black arrows”.**

**Line 686: Please change “magnetic” for “magnetic”.**

Thank you, we have changed them.

**Fig 26:**

**Line 691: Please replace “arrow” for “arrow in a”.**

**Line 692: Please change “arrows” for “arrows in b”.**

Thank you, done.

**Fig 27: “Axial un-enhanced computed...”. Is it really unenhanced??**

Thank you, you are right. It is a contrast-enhanced CT. We have changed it.

**Fig 30: Please use the same symbol to depict the finding on the 3 images and reference it in the figure legend.**

Thank you, we have done it.

**Fig 31: Add asterisk in the figure legend.**

Thank you, added.