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OPEN PEER REVIEW

The Prognostic Significance of Pulmonary CT Angiography in Predicting the Outcomes of Acute Pulmonary Thromboembolism

Mahsa Karbasi, Razieh Behzadmehr, Mohammad Kazem Tarzamani, Reza Javadrashid

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About this report

This open peer review (OPR) report shows the public comments made on this article during peer review, by the reviewers, the associate editor and the editor-in-chief, for every revision round, together with the authors' replies. Comments appear only with the consent of the people who wrote them. Reviewers who chose to sign their report are named; the others are shown as "Referee". Comments are edited for language only, and confidential remarks to the editors are not included.

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1 Original submission

1 comment · 7 Feb 2022

Editor-in-Chief

MAJOR REVISION 7 Feb 2022

Dear authors,
Your article needs Major Revision.
In the revised article, you should clarify the items below:
Please mention the ethical code and provide its link.
Please clarify the funding source and mention the grant number.
Regarding the importance of clarifying the “conflict of interest,” the corresponding author should fill out the “ICMJ form” and upload it during the submission process. (The form is available in the “conflict of interest” section of the site:
https://brief.land/iranjradiol/knowledgebase/category/tree.html#conflicts_of_interest.html).
Regards

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Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Reviewers' Comments:

Reviewer 1:
Dear authors
I admire your efforts to conduct this research; you have tried to find some CT angiography parameters to figure out the mortality probability in the setting of acute PE. Despite the knowledgeable idea of this research, several points should be addressed to make the manuscript ready for publication.

Title, abstract, and background
The term "prognostic value" implies that you will report an odds ratio or hazard ratio. You have not included the related analysis in your work. Please either change the term or include the analysis in your report.

R- We changed it to "utility".

Background
An explanation of the idea behind the study, a summary of the research design, and the importance of the findings in daily practice is lacking.

R-As we have mentioned in the background section, the idea behind this study comes from the importance of RV dysfunction suggested by CTPA in PE patients and inconsistent results in the literature, that need to be verified in further studies in this regard. As we have discussed, these indicators may help physicians to manage patients more efficiently.

We have added more to the background section to provide a summary of the research design:

"In this study we used CTPA to examine patients with hemodynamically-stable acute PE. Accordingly, some of most important parameters mentioned earlier were obtained and tested to predict the outcome of patients."

Methods
You mentioned that you excluded known cases of interstitial lung disease from the study. I was hoping you could explain why you did not exclude other pulmonary diseases, including chronic obstructive pulmonary disease patients or neoplasms.

R- There was no patient with chronic obstructive pulmonary disease or neoplasms in this study. We have added these to the text.

You had better emphasize the study's prospective design in the first paragraph of the methods.

R-It was emphasized in the discussion section.

Please clarify if the acquisition system and the interpretation workstation were different brands? (GE and Siemens).

R-They are different as mentioned in the text.

Provide the data of interobserver variability if available.

R-Since the reports were based on consensus, we did not document interobserver variability.

Explain the degree of expertise of the interpreting radiologists.

R-Two attending radiologists, one last-year resident of radiology (added to the text in the method section).

You have neither described anything about the follow-up data you have included nor defined the variables.

R-Sorry for this. We have added this paragraph to the methods section, before statistical analysis: "All patients were followed up for 60-days after admission and the 60-day mortality rate was used as an outcome variable. The other outcome variable was the Qanadli index, that was used to represent PE severity. The Qanadli scores ranges from 0 to 100% and defines the severity of arterial obstruction based on the total count of involved arteries corrected by the severity of occlusion (1 for partial obstruction and 2 for complete obstruction) (12)."

Results
You had said in the methods section that you excluded unstable patients from the study; regarding this point, how can you justify the following sentence in the results section: "CPR followed by intubation was required in 3 patients (4.9%)"

R-They happened during the follow-up period. It was added to the text.

You should add the description of the Qanadli index that you have reported in the results to the methods section.

R-We added it to the method section.

You have used a simple statistical method which is accepted. I wonder if you have tried survival analysis methods for predicting the mortality in your study population. Did you calculate the odds ratio? Please explain more and add the related data to your manuscript if available.

R-We did not because of insufficient number of patients. Actually, it was beyond the scope of the present study. We are now working on further cases and will publish another paper as soon as sufficient data for this purpose is gathered. We added this to the limitation section:

"Although to achieve our current goals in this study the number of patients was enough, to conduct a survival analysis we need a larger sample size. By enrolling more patients, we will be able to extend our methodology in future studies. "

Discussion
Summarize the main findings of your study in the first paragraph of the discussion.

R- We added this to the first paragraph in the discussion section: "Accordingly, an abnormal interventricular septum morphology, RVD/LVD, and the reflux of the contrast medium reflux into the IVC significantly predicted the severity of PE. While bolus time curve indicators were not prognostic, pulmonary trunk diameter significantly predicted 60-day mortality (optimal cut-off value, 33.5 mm; sensitivity, 66.7%, specificity, 65.4%)."

Explain about low sample size and your solution in the limitations paragraph.

R-We added this to the limitation section:

"Although to achieve our current goals in this study the number of patients was enough, to conduct a survival analysis we need a larger sample size. By enrolling more patients, we will be able to extend our methodology in future studies. "

A comprehensive, not new, systematic review is the work of Vedovati et al. published in 2013. I recommend reading the article and adding its main points with your hypothesis formations to the discussion. [Vedovati MC, Germini F, Agnelli G, Becattini C. Prognostic role of embolic burden assessed at computed tomography angiography in patients with acute pulmonary embolism: systematic review and meta-analysis. Journal of Thrombosis and Haemostasis. 2013 Dec;11(12):2092-102.]

R-This is an interesting study but it has nothing to do with the aim and scope of our present study. We did not aim to examine the usefulness of Qanadli scoring system to predict mortality. Instead, we used it as an accepted indicator for PE severity (i.e. an outcome variable).

Thank you very much for your time and precious comments.

Reviewer 2:
This is a potentially interesting research article regarding prognostic value of CTPA parameters as indicators of
right ventricular dysfunction and patient's prognosis in acute pulmonary embolism.
although different CTPA variables were evaluated for this purpose, most of CTPA derived indicators of RV dysfunction did not have significant correlation with patient's prognosis according to the results of this article.
The main drawback as authors have mentioned is that only hemodynamically stable PE patients were evaluated in this study. It is assumed that if hemodynamically unstable patients were evaluated, then probably other additional CTPA indicators would have been found to affect PE patients prognosis.
I personally believe not much work could be done in this regard, unless a separate study get designed.
I think this manuscript in current shape may have educational value for the clinicians who are involved with PE management.
Therefore I agree to accept this manuscript after minor language revisions.

Thank you and Good luck.

R-Thank you very much for your time and comments.

Reviewer 3:

I find the article "Prognostic value of CT pulmonary angiography-derived indicators of right ventricular dysfunction in acute pulmonary embolism; a prospective study" not suitable for publication in the IJR.

The main reason is major methodological flaws in two parts, first the CT protocol, second the statistical analysis:

Lines 115-128 don't make sense:

" The SmartPrep protocol (GE Healthcare) was employed to perform test bolus. " SmartPrep(SPP) and Test bolus(TBP) are different techniques. For the SPP, a fixed volume of contrast medium is injected at a rate of 3-5 mL/sec, whereas for the TBP, a 10-20 mL test bolus is injected prior to the main injection. Scanning was stopped after the radiographer had seen enhancement and then washout of the contrast medium in the pulmonary vessels. A region of interest (ROI) is then placed within the pulmonary artery outflow tract, and contrast enhancement within the ROI is graphed against time. The time it takes between initiating the injection and peak contrast enhancement is then used as the scan delay time for the CTPA image acquisition series.

Lines 126-127 mention that "After a peak enhancement in the ascending aorta 127 was confirmed, a 3 seconds delay was used."

This is obviously wrong. For SmartPrep the ROI should be at the level of the pulmonary trunk or main pulmonary arteries are obtained while contrast medium was being injected. Once the initial "blush" of contrast medium was observed in the pulmonary vessels, after a few seconds of delay, image acquisition is commenced. Putting the ROI on the Aorta results in too late acquisition and non-diagnostic study.

There are also major flaws in the statistical methods. For example lines 201-202, mention comparing Qanadli index and RVD/LVD using Pearson Chi squared. These are two continuous/ordinal variables and cannot be compared using Chi squared.

R-We are sorry that you found this paper flawed.

In term of the first part of your criticism regarding the CT protocol, we used the SmartPrep bolus tracking software to perform (guide) test bolus as per the guideline proposed by the software pamphlet. ROIs were placed on the main pulmonary artery, as described in the text, not on the ascending aorta. The ascending aorta was used as a level for obtaining a series of dynamic, low-dose scans (5 sec after initiating the contrast material injection).

About your comment regarding the statistical analysis, we used Pearson coefficient not Pearson Chi-squared. They are not the same.

Thank you very much for your time and comments.

Reviewer 4:
Thanks from authors for their submission to the IJR.
Overall, this study is relatively well designed, executed, analyzed and written. However, there are some important points to be considered as follows:
1. Small sample size that can negatively effect of statistical significance of the findings. A similar study entitled "CT Signs of Right Ventricular Dysfunction Prognostic Role in Acute Pulmonary Embolism" is available in this field with a sample size of 260 people. Must be mentioned this point as limitation of study.

R-Actually considering the predefined goals of our study, the recruited sample size was found adequate before doing the final analysis. Please note that goals of studies are different. We added this to the limitation section of the revied paper.

2. Failure to consider other clinical conditions and underlying diseases that may effect on the outcomes of the study, such as those listed in table 2 of above mentioned paper

R-The only place that these parameters would be potentially playing a role is in the comparison between deceased and survived patients. These two groups in our study were not significantly different in this regard.

3. Do not use multivariate analysis to control potential confounders

R-Multivariable study is used when significant cofounders present in univariable analysis. We did not find any.

4. Failure to follow the written instructions of the IJR

R-we did our best to adhere to this guideline. Please let us know if you are talking about a particular one.

5. Failure to state exact inclusion criteria

R-Again, the inclusion and exclusion criteria are clearly mentioned in the beginning of the methods section. Please let us know if you this something is missing.

6. Lack of expression of calendar time and study environment

The time was added to the methods section: January 2016 through January 2017

R-About the location, we did not mention it because of journal policies. We can add this information in case this paper is accepted for publication.

7. It is recommended to refer to the after mentioned paper (by D.K Kang and et.all) as a template to eliminate the shortcomings mentioned above.

R-This paper was cited in the present paper (Ref No. 4).

Thank you very much for your time and comments.

Associate Editor's Comments:

Associate Editor 1:
Dear authors
I appreciate your valuable article submission in IJR. Some issues are important to notice.

REVIEWER 1

Instead of CT pulmonary angiography, it's much better pulmonary CT angiography (PCTA).

R-Changed.

The sensitivity and specificity of pulmonary artery diameter for predicting outcome were low in your study.

R-This was added to the limitations section.

In a brief, please explain the Qanadli index in the article.

R-Added.

The diameter of the pulmonary artery is not a constant parameter and may have many variabilities which may not be related to PTE including pulmonary diseases and pulmonary hypertension.

R-We added this to the limitation and recommendation for future studies: "Another important limitation in the present study is that the diameter of the pulmonary artery my not be a constant parameter and could be associated with many variabilities which may not be related to pulmonary embolism, such as pulmonary diseases and pulmonary hypertension. This should be examined in future studies, too."

Thank you very much for your time and comments.

2 Revision 1

0 comments

No public comments in this round.

3

Revision 2

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Reviewer 1:

Title, abstract, and background
Q-The term "prognostic value" implies that you will report an odds ratio or hazard ratio. You have not included the related analysis in your work. Please either change the term or include the analysis in your report.

R- We changed it to “utility”. Page 1, Line 1; page 4, line 64

Background
Q-An explanation of the idea behind the study, a summary of the research design, and the importance of the findings in daily practice is lacking.

R-As we have mentioned in the background section, the idea behind this study comes from the importance of RV dysfunction suggested by CTPA in PE patients and inconsistent results in the literature, that need to be verified in further studies in this regard. As we have discussed, these indicators may help physicians to manage patients more efficiently.

We have added more to the background section to provide a summary of the research design: Page 3, Lines 59-61

“In this study we used CTPA to examine patients with hemodynamically-stable acute PE. Accordingly, some of most important parameters mentioned earlier were obtained and tested to predict the outcome of patients.”

Methods
Q-You mentioned that you excluded known cases of interstitial lung disease from the study. I was hoping you could explain why you did not exclude other pulmonary diseases, including chronic obstructive pulmonary disease patients or neoplasms.

R- There was no patient with chronic obstructive pulmonary disease or neoplasms in this study. We have added these to the text. Page 5, Lines 87, 88

Q-You had better emphasize the study's prospective design in the first paragraph of the methods.

R-Instead, it was emphasized in the discussion section. Page 11, Lines 201-202:

“Doing so in a prospective setting is one of the robust characteristics of the current study.”

Q-Please clarify if the acquisition system and the interpretation workstation were different brands? (GE and Siemens).

R-They are different as mentioned in the text. Page 5, lines 94, 97 and 99; and page 6, line 113.

Q-Provide the data of interobserver variability if available.

R-Since the reports were based on consensus, we did not document interobserver variability. Page 6, lines 112-114.

Q-Explain the degree of expertise of the interpreting radiologists.

R-Two attending radiologists, one last-year resident of radiology: Page 6, lines 112 and 114.

Q-You have neither described anything about the follow-up data you have included nor defined the variables.

R-Sorry for this. We have added this paragraph to the methods section: Page 8, Lines 146-151:

“All patients were followed up for 60-days after admission and the 60-day mortality rate was used as an outcome variable. The other outcome variable was the Qanadli index, that was used to represent PE severity. The Qanadli scores ranges from 0 to 100% and defines the severity of arterial obstruction based on the total count of involved arteries corrected by the severity of occlusion (1 for partial obstruction and 2 for complete obstruction) (12).”

Results
Q-You had said in the methods section that you excluded unstable patients from the study; regarding this point, how can you justify the following sentence in the results section: "CPR followed by intubation was required in 3 patients (4.9%)"

R-They happened during the follow-up period. Page 9, line 163.

Q-You should add the description of the Qanadli index that you have reported in the results to the methods section.

R-We added it to the method section. Page 7, Lines 123-126:

“Briefly, Qanadli index is derived from CT images, incorporating location and size of a thrombus. This index is the product of N × D, where N is the number of segmental branches located distal to the affected area, and D defines the degree of obstruction (1; partial, 2; total).”

Q-You have used a simple statistical method which is accepted. I wonder if you have tried survival analysis methods for predicting the mortality in your study population. Did you calculate the odds ratio? Please explain more and add the related data to your manuscript if available.

R-We did not because of insufficient number of patients. Actually, it was beyond the scope of the present study. We are now working on further cases and will publish another paper as soon as sufficient data for this purpose is gathered. We added this to the limitation section: Page 13, Lines 250-252.

“Although to achieve our current goals in this study the number of patients was enough, to conduct a survival analysis we need a larger sample size. By enrolling more patients, we will be able to extend our methodology in future studies. “

Discussion
Q-Summarize the main findings of your study in the first paragraph of the discussion.

R- We added this to the first paragraph in the discussion section: Page 11, Lines 202-206:

“Accordingly, an abnormal interventricular septum morphology, RVD/LVD, and the reflux of the contrast medium reflux into the IVC significantly predicted the severity of PE. While bolus time curve indicators were not prognostic, pulmonary trunk diameter significantly predicted 60-day mortality (optimal cut-off value, 33.5 mm; sensitivity, 66.7%, specificity, 65.4%).”

Q-Explain about low sample size and your solution in the limitations paragraph.

R-We added this to the limitation section: Page 13, Lines 250-252.

“Although to achieve our current goals in this study the number of patients was enough, to conduct a survival analysis we need a larger sample size. By enrolling more patients, we will be able to extend our methodology in future studies. “

Q-A comprehensive, not new, systematic review is the work of Vedovati et al. published in 2013. I recommend reading the article and adding its main points with your hypothesis formations to the discussion. [Vedovati MC, Germini F, Agnelli G, Becattini C. Prognostic role of embolic burden assessed at computed tomography angiography in patients with acute pulmonary embolism: systematic review and meta-analysis. Journal of Thrombosis and Haemostasis. 2013 Dec;11(12):2092-102.]

R-This is an interesting study but it has nothing to do with the aim and scope of our present study. We did not aim to examine the usefulness of Qanadli scoring system to predict mortality. Instead, we used it as an accepted indicator for PE severity (i.e. an outcome variable).

Thank you very much for your time and precious comments.

Reviewer 2:

This is a potentially interesting research article regarding prognostic value of CTPA parameters as indicators of
right ventricular dysfunction and patient's prognosis in acute pulmonary embolism.
although different CTPA variables were evaluated for this purpose, most of CTPA derived indicators of RV dysfunction did not have significant correlation with patient's prognosis according to the results of this article.
The main drawback as authors have mentioned is that only hemodynamically stable PE patients were evaluated in this study. It is assumed that if hemodynamically unstable patients were evaluated, then probably other additional CTPA indicators would have been found to affect PE patients prognosis.
I personally believe not much work could be done in this regard, unless a separate study get designed.
I think this manuscript in current shape may have educational value for the clinicians who are involved with PE management.
Therefore I agree to accept this manuscript after minor language revisions.

Thank you and Good luck.

R-Thank you very much! We had a native speaker colleague to recheck the whole article.

Reviewer 3:

The main reason is major methodological flaws in two parts, first the CT protocol, second the statistical analysis:

Q-Lines 115-128 don’t make sense:
” The SmartPrep protocol (GE Healthcare) was employed to perform test bolus. “
SmartPrep(SPP) and Test bolus(TBP) are different techniques. For the SPP, a fixed volume of contrast medium is injected at a rate of 3-5 mL/sec, whereas for the TBP, a 10-20 mL test bolus is injected prior to the main injection. Scanning was stopped after the radiographer had seen enhancement and then washout of the contrast medium in the pulmonary vessels. A region of interest (ROI) is then placed within the pulmonary artery outflow tract, and contrast enhancement within the ROI is graphed against time. The time it takes between initiating the injection and peak contrast enhancement is then used as the scan delay time for the CTPA image acquisition series.
Lines 126-127 mention that “After a peak enhancement in the ascending aorta
127 was confirmed, a 3 seconds delay was used.”
This is obviously wrong. For SmartPrep the ROI should be at the level of the pulmonary trunk or main pulmonary arteries are obtained while contrast medium was being injected. Once the initial “blush” of contrast medium was observed in the pulmonary vessels, after a few seconds of delay, image acquisition is commenced. Putting the ROI on the Aorta results in too late acquisition and non-diagnostic study.

R- We used the SmartPrep bolus tracking software to perform (guide) test bolus as per the guideline proposed by the software pamphlet. ROIs were placed on the main pulmonary artery, as described in the text, not on the ascending aorta. Page 6, lines 104 and 105.

The ascending aorta was used as a level for obtaining a series of dynamic, low-dose scans (5 sec after initiating the contrast material injection).

Q-There are also major flaws in the statistical methods. For example lines 201-202, mention comparing Qanadli index and RVD/LVD using Pearson Chi squared. These are two continuous/ordinal variables and cannot be compared using Chi squared.

R-We did not find any error in the statistical section. For the mentioned example, we used Pearson coefficient (r) not Pearson Chi-squared. They are not the same.

Thank you very much for your time and comments.

Reviewer 4:

Q- Small sample size that can negatively effect of statistical significance of the findings. A similar study entitled "CT Signs of Right Ventricular Dysfunction Prognostic Role in Acute Pulmonary Embolism" is available in this field with a sample size of 260 people. Must be mentioned this point as limitation of study.

R-Actually considering the predefined goals of our study, the recruited sample size was found adequate before doing the final analysis. Please note that goals of studies are different. We added this to the limitation section of the revised paper. Page 13, Lines 250-252

Q-Failure to consider other clinical conditions and underlying diseases that may effect on the outcomes of the study, such as those listed in table 2 of above mentioned paper

R-The only place that these parameters would be potentially playing a role is in the comparison between deceased and survived patients. These two groups in our study were not significantly different in this regard. Page 16, Table 1

Q- Do not use multivariate analysis to control potential confounders

R-Multivariable study is used when significant cofounders present in univariable analysis. We did not find any.

Q- Failure to follow the written instructions of the IJR

R-we did our best to adhere to this guideline. Please let us know if you are talking about a particular one.

Q- Failure to state exact inclusion criteria

R-Again, the inclusion and exclusion criteria are clearly mentioned in the beginning of the methods section, Page 5, Lines 86-88. Please let us know if you this something is missing.

Q- Lack of expression of calendar time and study environment

R-The time was added to the methods section, Page 5, Line 84, January 2016 through January 2017

About the location, we did not mention it because of journal policies. We can add this information in case this paper is accepted for publication.

Q- It is recommended to refer to the after mentioned paper (by D.K Kang and et.all) as a template to eliminate the shortcomings mentioned above.

R-This paper was already cited in the present paper (Ref No. 4).

Thank you very much for your time and comments.

Associate Editor's Comments:

REVIEWER 1

Q-Instead of CT pulmonary angiography, it’s much better pulmonary CT angiography (PCTA).

R-It was changed throughout the text:

page 1, lines 6,7,8, 11

page 2, lines 24, 28

page 3, lines 46, 50, 56

page 4, line 64

page 5, lines 85, 91, 92

Q-The sensitivity and specificity of pulmonary artery diameter for predicting outcome were low in your study.

R-This was added to the limitations section, pages 13-14, lines 253-259:

“In addition, conducting another study with a larger sample size may yield higher sensitivity/specificity for the major prognostic parameters such as the pulmonary artery diameter.”

Q-In a brief, please explain the Qanadli index in the article.

R-It was added to the text, page 7, lines 123-126.

Q-The diameter of the pulmonary artery is not a constant parameter and may have many variabilities which may not be related to PTE including pulmonary diseases and pulmonary hypertension.

R-We added this to the limitation and recommendation for future studies: Pages 13-14, lines 256-259:

“Another important limitation in the present study is that the diameter of the pulmonary artery my not be a constant parameter and could be associated with many variabilities which may not be related to pulmonary embolism, such as pulmonary diseases and pulmonary hypertension. This should be examined in future studies, too.”

Thank you very much for your time and comments.

3 Revision 2

1 comment · 24 Apr 2022

Editor-in-Chief

MINOR REVISION 24 Apr 2022

Dear authors,
Your article needs Minor Revision.
Regards

4

Revision 3

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Reviewer 1:

As I mentioned in my previous revision, although there are definite limitations in this study such as evaluation only stable PE patients; I still believe there are educational points for the readers. I think the language revision is now acceptable. There I accept this article for being published at IJR.

R-Thank you very much!

Reviewer 2:

At present, this manuscript is appropriate according to methodology point of view.

R-Thank you very much!

Associate Editor 1:

1-Please correct the RVD / RVD to RVD/LVD in the following text {however, Ammari et al (27) 246 showed a high correlation between RVD/RVD measurements by CT and 247 echocardiography.}

R-Sorry for the typo. I rectified it in the text: Page 13, Line 246

2-Please insert a figure for PTE for massive and peripheral types from your patients and related Qanadli index.

R-We did not include any patient with massive PTE in this study. I added two figures for central (figure 1, page 6, line 119) and peripheral (figure 2, page 7, line 121) PTEs with related calculated Qanadli index scores. Please let me know if we have understood this comment incorrectly.

3-Please insert a figure for RV/LV ratio and pulmonary artery measurement.

R-We have added figure 3 (page 7, line 132) and figure 4 (page 8, line 140), respectively.

Thank you very much for your time and comments.

4 Revision 3

1 comment · 14 May 2022

Editor-in-Chief

MINOR REVISION 14 May 2022

Dear authors,
Your article needs Minor Revision.
Regards

5

Revision 4

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Associate Editor's Comments:

Associate Editor 1:

Dear authors

Please recheck English writing and grammar point.

R-We had a native speaking colleague to check and correct the mentioned errors. They are highlighted all across the manuscript.

The method of pulmonary CTA was not straightforward, smart prep, test bolus, or both . The "PCTA imaging protocol" would be rechecked (lines 91- 110)

R-Sorry for this problem. We asked the technologist at the time to review the article and revise it. It was corrected in the method section: Page 6, Lines: 111-131

In Fig -5 you used test bolus and in the method used smart prep.

R-the smart prep was not used and omitted from the text (Page 6, Lines 111-131)

Thank you very much for your time and precious comments. Please let us know if you need further correction is needed.

5 Revision 4

1 comment · 4 Jun 2022

Editor-in-Chief

MINOR REVISION 4 Jun 2022

Dear authors,
Your article needs Minor Revision.
Regards

6

Revision 5

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Dear reviewer,

The title page was changed as per suggested.

page 2, line 36: “and the contrast medium reflux into” changed:

page 3, line 43-44: keywords: “prognosis” changed to “right ventricular dysfunction”

Page 6, line 116: “ten” changed to “10”

Did the protocol was craniocaudal or caudocranial? Page 7, lines 129-130: “Caudocranial imaging was performed between the lowest hemidiaphragm and the top of the lungs.”

page 7, line 132: “year-four” changed to “fourth year”

page 16, lines: 298-299: “We excluded patients with pulmonary hypertension and/or pulmonary disease in this study.”

Thank you very much for your precious comments and corrections.

6 Revision 5

1 comment · 4 Jul 2022

Editor-in-Chief

MINOR REVISION 4 Jul 2022

Dear authors,
Your article needs Minor Revision.
Regards

7

Revision 6

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Reviewer 1:

Please cite ref 8 in a sequential order to the manuscript.

R-It was rectified: Page 7-Line 136

In figure 2 don't exist right arrow.

R-The redundant part of Fig 2 legend was removed.

In figure 3 please label images as A and B for right and left ventricular short-axis dimensions

R-It was labeled as per instructed.

In figure 4 you mentioned Pulmonary trunk diameter measurement of 1.5 cm but in the image is 3.24cm. Which one is correct?

R-1.5 cm is the distance from the main pulmonary artery bifurcation not the diameter.

Thank you very much.

Associate Editor 1:

Please refer to the attached PDF file.

R-The title was changed as recommended.

Thank you very much.

Associate Editor 2:

1-it is recommended the authors correct the title as: “The prognostic indicators of pulmonary CT angiography for predicting outcome in acute hemodynamically stable pulmonary embolism; A prospective study”

R-The title was changed following the instruction given by the associate editor 1.

2-in line 25, objective of abstract, please change examine to evaluate.

R-It was changed: page 2, line 25

3- it is recommended the authors correct in line 39 the sentence as: “Bolus time curve indicators did not show any significant predictive value”

R-It was changed: page 2, line 39

4-- it is recommended the authors correct in line 64: “….. lives the majority of patients”

R-It was changed: page 4, line 64

5-in line 82, please correct as: “To evaluate the prognostic value of certain PCTA-derived indicators ……”

R-It was changed: page 5, line 82

6-please add numbers to sub titles, for example; 3-1-Study design and population

R- Numbers are added accordingly: page 6, line 102; page 6, line 110; page 7, line 131; page 9, line 172

7-it is better the authors add the complete data of SPSS manufacturer based on IBM site.

R-It was corrected on the basis of the available information on their website: page 9, line 173

8- it is better the authors correct in line 176 and 177, “receiver operating characteristic (ROC) curve” and also in figure 8 legend]

R-They are corrected: page 9, line 176 and Fig 8 legend.

9-the authors mentioned: “The mean maximum enhancement was 10.14± 4.48 H (3.4-28)” what is the meaning of H? is it The Hounsfield unit? Then it is HU.

R-It was changed: page 11, line 214

10-in table 1, the data of Cardiopulmonary resuscitation and intubation in survived patients is unclear: 2 93.8)

R-It was corrected: Table 1

11-in line 241, the authors mentioned: “the reflux of the contrast medium reflux into the IVC” it seems the second reflux should be deleted.

R-It was changed: page 13, line 241

12- in figure 8 legend, acute pulmonary diameter seems incorrect. It is acute pulmonary embolism.

R-It was corrected: Fig 8 legend.

Thank you very much.

7 Revision 6

1 comment · 23 Jul 2022

Editor-in-Chief

ACCEPT 23 Jul 2022

Dear authors,
Your article is acceptable for publication in IJR.
Regards