Iranian Journal of Radiology
Volume 20 · Issue 2 · e133022

OPEN PEER REVIEW

Evaluation of the Correlation of Pulmonary Arterial Hypertension (PAH) with the Pulmonary Artery Trunk Diameter and Serum Level of N-Terminal Pro B-Type Natriuretic Peptide (NT-proBNP) in Patients with PAH

Sara Gharibi, Mojgan Ghavami, Hamid Khederlou, Seyyed Mojtaba Ghorashi, soheila Dabiran, Fahimeh Zeinalkhani

SUBMITTED	REVISED	ACCEPTED	DOI
3 Dec 2022	30 May 2023	6 Jun 2023	10.5812/iranjradiol-133022

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.

More about open peer review: brieflands.com/knowledgebase/opr

Contents

1 **Original submission** Referee 1, Referee 2, Editor-in-Chief 2
2 **Revision 1** Referee 1, Referee 2, Editor-in-Chief 4
Authors' reply to reviewers 5
Reviewer and editor comments 13
3 **Revision 2** Editor-in-Chief 14
Authors' reply to reviewers 15
Reviewer and editor comments 29

1 Original submission

3 comments · 19 Dec 2022 – 31 Dec 2022

Referee 1 Reviewer

MAJOR REVISION 19 Dec 2022

Thanks to the authors for their submission to the IJR.
Overall, this manuscript has an appropriate scientific writing structure, but the application of the study results is unclear. Moreover, the following points should be considered:
Abstract
1. Background and Objective: The background and objective are unrelated. The background is written in a way that suggests that the objective of the study is to assess the diagnostic value of computed tomography (CT) in the diagnosis of pulmonary artery hypertension (PAH); however, the objective of the study is to evaluate the correlation between the main pulmonary artery diameter (MPA-D) determined by computed tomography (CT) and the severity of PAH on echocardiography, as well as the N-terminal pro-b-type natriuretic peptide (NT-proBNP) serum level. I think that the first objective was more important and interesting, but it would require a case-control design and ROC analysis, which were not used here. Please correct this inconsistency between the background and objective sections.
2. Results: The correlation coefficients and p-value, or the mean value and significance level, should be presented in parentheses.
3. The conclusion is written like the results; it should describe the application of the study findings in the field.
Main Text
4. Method:
4.1. The Definitions of Variables section should be moved before the Ethics statement.
4.2. Statistical analysis: One-way analysis of variance should be used to compare the mean pulmonary artery diameter in table 3 across the three categories of pulmonary artery pressure. This test should be added to the statistical analysis section.
5. Why were other important clinical factors not considered in this study? This issue can cause residual confounding.
6. Table 1 should be presented without the sex category.
7. Table 2 should be presented in an appropriate style without redundant data. Data above or below the diagonal should be presented.
8. Table 3 should be presented with sections A and B.
9. The small sample size should be added as a limitation of the study.

Referee 2 Reviewer

MINOR REVISION 28 Dec 2022

Comments:
1- It is better to replace PAH in line 26 with PAP.
2- PH should be replaced with PAH throughout the manuscript to avoid misunderstanding.
3- Line 62 needs mm in front of 28.
4- The limitation of the study is that it could not assess sens and spe because it included only patients with MPA-d > 29 mm. This should be mentioned in the discussion.
5- In line 127, define most with an exact percentage.

6- Another limitation is the inclusion of contrast and noncontrast examinations and CT angio with different slice thicknesses, which may cause measurement bias. It is better to discuss this.

Editor-in-Chief MAJOR REVISION 31 Dec 2022

Dear authors,
Your article needs Major Revision.
Regards

2

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.

Dear respected Editor in Chief, **Prof. Kavous Firouznia**

Thank you very much for reviewing our manuscript entitled "**Evaluation of Correlation between Pulmonary Artery Hypertension and Pulmonary Artery Trunk Diameter and Serum NT-proBNP Level**" assigned as manuscript ID "133022".

We have revised our manuscript based on the respected reviewers' wishes. We have highlighted the revised part of the manuscript.

Kindly please find our detailed responses to the reviewer's comments:

 # Reviewer 1:

Abstract

Comment 1: Background and Objective: Background and objective are unrelated. Background written as a manner that the objective of study is assessment of diagnostic value of computed tomography (CT) in diagnosis of Pulmonary artery hypertension (PAH); but, objective of study is to evaluate the correlation between computed tomography (CT) determined main pulmonary artery diameter (MPA-D) and the severity of PAH in echocardiography as well as N-terminal pro-B-type natriuretic peptide (NT-proBNP) serum level. I think that the first objective was more important and interesting; but it is needed a case-control design and ROC analysis that not used here. Please, edit this inconsistency between background and objective sections.

Response 1: In accordance with the respected reviewer's wishes, we have changed the "Background" section as follows:

Background: Pulmonary Artery hypertension (PAH) has non-specific symptoms that make it difficult to diagnose by non-invasive methods. A variety of diagnostic tests are needed to evaluate patients. Increased diameter of main pulmonary in computed

tomography (CT) imaging is in favor of a high probability of PAH. Furthermore, N-Terminal prohormone B-type Natriuretic Peptide (NT- proBNP) and prohormone B-type Natriuretic Peptide (pro-BNP) can be considered predictors of prognosis in patients with PAH.

Comment 2: Results: The value of correlation coefficients and p-value, or mean value and significance level should be presented in the parenthesis.

Response 2: According to the respected reviewer's comment, we have pointed to the mentioned issue in the revised manuscript:

Results: The results of the present study in a total of 63 patients (70% male) with a mean age of 67.02 showed a positive and significant correlation between MPA-D and NT-proBNP (Pearson correlation: 0.444, P value: 0.000). This relationship was also seen between pulmonary artery pressure (PAP) and NT-proBNP (Pearson correlation: 0.353, P value: 0.005) and between MPA-D and PAP (Pearson correlation: 0.306, P value: 0.015). In these patients, the mean of MPA-D, PAP, and NT-proBNP was 32.58 mm, 47.9 mmHg, and 6563 pg/ml, respectively. (Significance level: P value <0.05)

Comment 3: Conclusion written like as results; It should be narrated the application of study finding in the field.

Response 3: We agree with the respected reviewer. The article has been revised in this regard:

Conclusion: Positive and significant correlation between PAP, MPA-D, and NT-proBNP levels in inter-group comparisons showed that if there is an abnormal diameter of

the pulmonary artery trunk on a CT scan, additional echocardiography, and measurement of serum NT-proBNP levels will be helpful.

Main Text

Comment 4: Method:

4.1. Definitions of Variables section should be transferred to the before of Ethics statement.

Response 4.1: We acknowledge that it might be better to replace mentioned sections. So, we have replaced these two parts in the revised manuscript:

Definitions of Variables

COPD was defined as a chronic condition with abnormal pulmonary function (post-bronchodilator forced expiratory volume in 1 s (FEV1)/forced vital capacity < 0.70 and FEV1< 80% with frequent exacerbation, necessitating recurrent hospitalization and the long-term use of bronchodilators) (16). PAH is defined as a resting mean pulmonary arterial pressure (mPAP)> 25 mm Hg, or an mPAP with exercise> 30 mm Hg, by echocardiography. (5).

Ethics statement

All participants provided written informed consent before their inclusion in the study and the investigation conformed to the principles outlined in the Declaration of Helsinki. Approval for the study protocol was obtained from the institutional ethics committee of IKHC (Ethical code: IR.TUMS.IKHC.REC.1398.284).

4.2. Statistical analysis: For comparison of mean of pulmonary artery diameter in table 3, in terms of three category of pulmonary artery pressure; it should be used of one way

analysis of variance. This test should be added in statistical analysis section.

Response 4.2: Regarding the respected reviewer's comment, we have added this part to the statistical analysis section:

To compare three categorical groups, a one-way analysis of variance (ANOVA) test was used.

Comment 5: Why other important clinical factors not considered in this study. This issue can be cause of residual confounding.

Response 5: In accordance with the respected reviewer's wishes, as mentioned in the revised manuscript, we add other clinical factors that were considered but were not mentioned in previous version of manuscript:

Those who had artifacts in their CT, subjects without NT-proBNP and/or accurate mPAP in echocardiography and patients with conditions leading to either elevated NT-proBNP or increased MPA-D were excluded including subjects who were admitted with heart failure with preserved or reduced ejection fraction, myocarditis, takotsubo cardiomyopathy, acute myocardial infarction/ coronary artery disease, cerebrovascular accident, sub-arachnoid hemorrhage, septic shock, acute respiratory distress syndrome, hepatic cirrhosis, hyperthyroidism, atrial fibrillation, history of congenital heart disease, acute and chronic thromboembolic pulmonary hypertension, chronic kidney disease, those with connective tissue disorders and vasculitis.

Comment 6: Table 1 should be presented without sex category.

Response 6: As the respected reviewer suggested, we removed the sex category from table 1. The article has been revised in this regard:

Table 1. Mean of age, MPA-D, PAP, and NT-proBNP

Variable	Mean ±SD
Age (year)	66.16±11.20
MPA-D (mm)	32.58±5.57
PAP (mHg)	47.90±16.97
NT-proBNP (pg/ ml)	6569.62±17415.01

Data are presented as mean ±standard deviation. MPA-D: Mean of pulmonary artery diameter, PAP: Pulmonary artery pressure, NT-proBNP: N-Terminal pro-B-type Natriuretic Peptide

---

Comment 7: Table 2 should be presented in an appropriate style without redundancy data. Data of upper or lower of diagonal should be presented**.**

Response 7: Regarding the respected reviewer's comment, we have changed the table 2 style. Data of upper and lower of diagonal is attached in .xlsx format.

Table 2. Correlation between age, MPA-D, PAP, and NT-proBNP with each other

Variable		NT-proBNP
Age	Pearson correlation	0.008
	P value	0.937
MPA-D	Pearson correlation	0.444
	P value	0.000
PAP	Pearson correlation	0.353
	P value	0.005

MPA-D: Mean of pulmonary artery diameter, PAP: Pulmonary artery pressure, NT-proBNP: N-Terminal pro-B-type Natriuretic Peptide

Comment 8: Table 3 should be presented with section A and B.

Response 8: As the respected reviewer suggested, we present table 3 with section A and B as follows:

Table 3. Comparison between MPA-D based on PAP and NT-proBNP as well as between PAP levels based on MPA-D and NT-proBNP

	Variable		Number (percentage)	mean ±standard deviation	p-value
Section A		**MPA-D (mm)**			
	PAP (mmHg)	<30	16 (25.3)	41.06±12.40	0.221
		≥30	47 (74.7)	54.45±16.59	
	NT-proBNP (pg/ ml)	<30	16 (25.3)	1533.75±2024.12	0.009
		≥30	47 (74.7)	4150.81±2762.91	
	Variable		**Number (percentage)**	**mean ±standard deviation**	**p-value**
Section B		**PAP (mm Hg)**			
	MPA-D (mm)	20-40	17 (27)	30.94±6.86	0.126
		41-60	32 (50.7)	33.31±4.70	
		>60	14 (22.3)	34.79±4.26	
	NT-proBNP (pg/ ml)	20-40	17 (27)	2294.71±2352.38	0.042
		41-60	32 (50.7)	3528.91±2838.03	
		>60	14 (22.3)	4835.21±2860.13	

MPA-D: Mean of pulmonary artery diameter, PAP: Pulmonary artery pressure, NT-proBNP: N-Terminal pro-B-type Natriuretic Peptide

Comment 9: Small sample size should be added as limitation of study.

Response 9: We agree with the respected reviewer that larger sample size would be better for clinical outcome assessment, so we have pointed to this issue in discussion and conclusion study.

 # Reviewer 2:

Comment 1: it is better to replace PAH in line 26 to PAP

Response 1: We have replaced it regarding respected reviewer suggestion.

Comment 2: PH should be replaced with PAH in the whole manuscript to avoid misunderstanding.

Response 2: We have replaced them regarding respected reviewer suggestion**.**

Comment 3: line 62 need mm in front of 28.

Response 3: Regarding the respected reviewer's comment, we have revised the manuscript as follows:

The presence of the "MPA-D> 28 mm" and "MPA-D/ADD> 1" in CT are in favor of a very high probability of PAH.

Comment 4: the limitation of study is that it could not assess sens and spe because just including patients with MPA-d > 29 mm ... it should be mentioned in discussion.

Response 4: In accordance with the respected reviewer's wishes, we have mentioned the pointed issue as a limitation:

Considering that this study only includes patients with MPA-D > 29 mm, another limitation is that specificity and sensitivity cannot be assessed.

Comment 5: line 127 define most with exact percentage.

Response 5: Regarding the respected reviewer's comment, we have mentioned the exact percentage as follows:

Eighty-six percent of the patients had a serum NT-proBNP level of less than 10,000 pg/ml and only two cases had a serum level of about 120,000 pg/ml.

Comment 6: another limitation is including either contrasts and non contrast and ct angio with different slice thickness which may cause measurement bias ... it is better to discuss it

Response 6: In accordance with the respected reviewer's wishes, we have mentioned the pointed issues as limitations:

Given that this study is retrospective and the patients with CT without contrast were collected, another limitation is measurement bias due to the non-contrast imaging study and also CT angiography with different slice thicknesses.

We hope that you will find our manuscript acceptable for publication in "Iranian Radiology Journal".

Sincerely yours

2 Revision 1

3 comments · 3 Apr 2023 – 10 May 2023

Referee 1 Reviewer

ACCEPT 3 Apr 2023

Thanks to the authors for appropriately revising the manuscript.
At present, it is suitable for publication in the IJR from a methodological perspective.

Referee 2 Reviewer

ACCEPT 12 Apr 2023

All requested changes have been applied by the authors.

Editor-in-Chief

MINOR REVISION 10 May 2023

Dear authors,
Your article needs Minor Revision.
Regards

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.

Dear respected Editor in Chief, **Prof. Kavous Firouznia**

Thank you very much for reviewing our manuscript entitled "**Evaluation of Correlation between Pulmonary Artery Hypertension and Pulmonary Artery Trunk Diameter and Serum NT-proBNP Level**" assigned as manuscript ID "133022".

We have revised our manuscript based on the respected associate editor's wishes. We have highlighted the revised part of the manuscript.

Kindly please find our detailed responses to the reviewer's comments:

Associate Editor's Comments:

 # Associate Editor 1:

Dear EIC

With respect to the revised copy of the manuscript, the corrections are accepted by the reviewers

 # Associate Editor 2

Comment 1: *It is better the authors don't use abbreviations in title.*

Response 1: By the respected reviewer's wishes, we have changed the "Title" section as follows:

> **Evaluation of Correlation between Pulmonary Artery Hypertension and Pulmonary Artery Trunk Diameter and Serum N-Terminal Prohormone B-type Natriuretic Peptide Level in Patients with Pulmonary Artery Hypertension**

Comment 2: *The authors mentioned: "Increased diameter of main pulmonary". What is the meaning of Main pulmonary? Main pulmonary artery? Please complete this part.*

Response 2: Regarding the respected reviewer's comment, we have changed the "Background" section as follows:

Abstract

Background: Pulmonary Artery hypertension (PAH) has non-specific symptoms that make it difficult to diagnose by non-invasive methods. A variety of diagnostic tests are needed to evaluate patients. Increased diameter of the main pulmonary artery in computed tomography (CT) imaging is in favor of a high probability of PAH.

Comment 3: *The title is inappropriate. it is not clear in which patients the correlation has been assessed. Please complete the title [for example, the authors can add in patients with pulmonary artery hypertension at the end of title]*

Response 3: As the respected reviewer suggested, the article has been revised in this regard:

Evaluation of Correlation between Pulmonary Artery Hypertension and Pulmonary Artery Trunk Diameter and Serum N-Terminal Prohormone B-type Natriuretic Peptide Level in Patients with Pulmonary Artery Hypertension

---

Comment 4: *The authors mentioned "and the comparison with the NT-proBNP serum level was evaluated". I think comparison is not appropriate here. It seems correlation is better word.*

Response 3: We acknowledge that it might be better to replace mentioned words. So, the manuscript has been revised in this regard:

:

Patients and Methods: In this cross-sectional study, 63 hospitalized patients with PAH in the context of chronic obstructive pulmonary disease from 2019 to 2020, after initial evaluations and collection of serum NT-proBNP levels and echocardiographic findings were extracted. In the chest CT scan, the largest diameter of the trunk of the pulmonary artery was determined. Finally, the correlation between the above indices and the correlation with the NT-proBNP serum level was evaluated.

Comment 5: *Please don't write P value as 0.000. it should be <0.001.*

Response 5: According to the respected reviewer's comment, we considered the mentioned issue in the revised manuscript:

Results: The results of the present study in a total of 63 patients (70% male) with a mean age of 67.02 showed a positive and significant correlation between MPA-D and NT-proBNP (Pearson correlation: 0.444, P value: <0.001).

Table 2. Section A- The correlation coefficient of NT-proBNP with age, MPA-D, and PAP. Section B- The correlation coefficient of PAP and MPA-D

	Variable		**NT-proBNP**
Section A	**Age**	Pearson correlation	0.008
		P value	0.937
	MPA-D	Pearson correlation	0.444

		P value	<0.001
	PAP	Pearson correlation	0.353
		P value	0.005
Section B	**Variable**		**PAP**
	MPA-D	Pearson correlation	0.306
		P value	0.015

MPA-D: Mean of pulmonary artery diameter, PAP: Pulmonary artery pressure, NT-proBNP: N Terminal pro-B-type Natriuretic Peptide

---

Comment 6: *What do you mean by "inter-group comparisons"?*

Response 6: Inter-group comparison between two sub-groups of MPA-D (less than 30 mm and at least 30 mm) and three sub-groups of PAP (20-40, 41-60, and >60mm Hg) was done.

We agree with the respected reviewer. The article has been revised in this regard:

Conclusion: Positive and significant correlation between PAP, MPA-D, and NT-proBNP levels in sub-group comparisons determined by MPA-D and PAP showed that if there is an abnormal diameter of the pulmonary artery trunk on a CT scan, additional echocardiography, and measurement of serum NT-proBNP levels will be helpful.

6. Conclusion

The results of this study showed that pulmonary artery pressure was positively correlated with pulmonary artery diameter. Also, serum NT-proBNP levels showed a positive and significant correlation with both pulmonary artery diameter and pulmonary artery hypertension. In sub-group comparisons (two sub-groups of PAP and three sub-groups of

MPA-D), patients' NT-proBNP levels also differed. Therefore, if there is an abnormal diameter of the trunk of the pulmonary artery on a CT scan, additional echocardiography, and measurement of serum NT-proBNP levels will be helpful. Future prospective studies with larger sample sizes are needed for evaluating the accuracy of CT-determined MPA-D as a prognostic factor for PAH.

Comment 7: *Please change methods title to patients and methods. In addition, please add sequential numbers to titles and sub-titles*

Response 7: Regarding the respected reviewer's comment, we have added sequential numbers to titles and sub-titles and changed the methods section as follows:

Patients and Methods: In this cross-sectional study, 63 hospitalized patients with PAH in the context of chronic obstructive pulmonary disease from 2019 to 2020, after initial evaluations and collection of serum NT-proBNP levels and echocardiographic findings were extracted.

3. Patients and Methods

3.1 Study Description

We conducted a cross-sectional study on patients admitted at Imam Khomeini Hospital Complex (IKHC), a general university center with a diagnosis of COPD exacerbation from .March 2019 to March 2020

1. Background

2. Objectives

3. Patients and Methods

3.1 Study Description

3.2 Definitions of Variables

3.3 Ethics statement

3.4 Statistical analysis

4. Results

5. Discussion

6. Conclusion

”**Comment 8:** *The authors wrote “or” in line 80. I think it should be “and*

Response 8: Regarding the respected reviewer’s comment, we have changed the mentioned .issue

3.1 Study Description

We conducted a cross-sectional study on patients admitted at Imam Khomeini Hospital Complex (IKHC), a general university center with a diagnosis of COPD exacerbation from March 2019 to March 2020. Participants who have MPA-D> 29 mm at CT scan were eligible for inclusion. Patients underwent additional para-clinical evaluations such as echocardiography and laboratory tests. The demographic and clinical characteristics, laboratory findings, echocardiographic parameters, and CT findings were retrieved from hospital/medical records.

All patients were imaged in the supine position, with breath-holding at inspiration. CT (including pulmonary CT angiography and spiral chest CT with or without contrast with three-dimensional (3D)-Reconstruction) was performed by a single multi-detector scanner (16 slice CT equipment, SOMATOM Sensation 16, Siemens, Forchheim, Germany) and was reported by an experienced radiologist. MPA-D on CT scan was measured using the true axial and 3D-Reconstruction model.

Comment 9: *It is better the authors add full data of Siemens, GE and SPSS in method section.*

Response 9: According to the respected reviewer's comment, we have pointed to the mentioned issue in the revised manuscript:

Patients and Methods

3.1 Study Description

We conducted a cross-sectional study on patients admitted at Imam Khomeini Hospital Complex (IKHC), a general university center with a diagnosis of COPD exacerbation from March 2019 to March 2020. Participants who have MPA-D> 29 mm at CT scan were eligible for inclusion. Patients underwent additional para-clinical evaluations such as echocardiography and laboratory tests. The demographic and clinical characteristics, laboratory findings, echocardiographic parameters, and CT findings were retrieved from hospital/medical records.

All patients were imaged in the supine position, with breath-holding at inspiration. CT (including pulmonary CT angiography and spiral chest CT with or without contrast with three-dimensional (3D)-Reconstruction) was performed by a single multi-detector scanner

(16 slice CT equipment, SOMATOM Sensation 16, Siemens, Forchheim, Germany) and was reported by an experienced radiologist. MPA-D on CT scan was measured using the true axial and 3D-Reconstruction model.

Echocardiography was performed using an echocardiographic device (Vivid S60., General Electric Healthcare, Chicago, IL, USA) by an experienced cardiologist. Multiple views were used to obtain the optimal Doppler estimation of tricuspid regurgitation (TR) velocity (V). The TR gradient (TRG) was then calculated using the modified Bernoulli equation (TRG= $4V^2$).

3.4 Statistical analysis

Continuous data were described using mean with standard deviation or median with 25th and 75th percentiles for normally and skew distributed variables, respectively. The normality of the variables was checked using histogram charts as well as descriptive measures. Number and Frequencies (%) were used for expressing categorical variables. The Chi-square test was used to compare discrete variables and the Student's t-test to compare means between two quantitative variables. The bivariate correlation between two normally distributed variables was measured by the Pearson correlation coefficient. To compare three categorical groups, a one-way analysis of variance (ANOVA) test was used. Differences were considered significant with p-value < 0.05. All statistical analyses were conducted applying IBM SPSS Statistics for Windows, version 23.0 (IBM Corp., Armonk, NY, USA).

Comment 10: *The authors mentioned: "To compare three categorical groups, a one-way analysis of variance (ANOVA) test was used" I think categorical variables should be .compared with non-parametric tests not with parametric ANOVA test*

Response 10: Regarding the respected reviewer's comment in the previous major revision, we have added this part to the statistical analysis section. A one-way analysis of variance (ANOVA) test is used for comparison between two or more categories of a categorical independent variable and also a normally distributed interval dependent variable. To use ANOVA, we have broken down variables (PAP and MPA-D) by the sub-groups (levels of the .independent variables)

Comment 11: *Please add unit of variables in all parts of paper [for example MPAD in line 125]*

Response 11: Regarding the respected reviewer's comment, we have revised the manuscript as follows:

The mean MPA-D, minimum and maximum values in these patients were 32.58, 21, and 55 mm, respectively.

Comment 12: *This sentence is unclear: "These conditions are for the NT-proBNP variable with an average of 6569.62 pg/ml, which is between 2 and 122971 pg/ml" what is the .meaning of condition here? Please write better*

Response 12: We agree with the respected reviewer's comment. The article has been revised :in this regard

4. Results

In this study, 63 patients were studied, of which 44 patients were male and 19 patients were female. These patients had a mean age of 66.16 ± 11.20 years (**Table 1).**

The mean MPA-D, minimum and maximum values in these patients were 32.58, 21, and 55 mm, respectively. The mean of PAP was 47.90 mmHg and PAP values ranged from 21 to 97 mmHg. NT-proBNP values ranged between 2 and 122971 pg/ml with an average of 6569.62 pg/ml. Eighty-six percent of the patients had a serum NT-proBNP level of less than 10,000 pg/ml and only two cases had a serum level of about 120,000 pg/ml. MPA-D levels were mostly between 30 and 40 mm, and only two patients had MPA-D levels above 50 mm. Patients mostly had PAP levels between 20 and 70 mmHg. PAP level less than 20 mmHg was not detected in any patient.

Comment 13: *The authors have mentioned a pearson correlation coefficient of 0.306 between MPA-D and PAP in abstract while they did not mention it in result of paper and in .tables. We need this data to be mentioned in paper*

Response 13: Regarding the respected reviewer's comment, we have revised the manuscript as follows:

Age was not significantly correlated with any of the levels of MPA-D, PAP, and NT-proBNP. MPA-D showed a significant positive correlation with NT-proBNP (Pearson correlation: 0.444, P value: <0.001). PAP had a positive significant correlation with MPA-D (Pearson correlation: 0.306, P value: 0.015). This relationship was also seen between PAP and NT-proBNP (Pearson correlation: 0.353, P value: 0.005) (**Table 2).**

Table 2. Section A- The correlation coefficient of NT-proBNP with age, MPA-D, and PAP. Section B- The correlation coefficient of PAP and MPA-D

	Variable	**NT-proBNP**

	Age	Pearson correlation	0.008
		P value	0.937
	MPA-D	Pearson correlation	0.444
		P value	<0.001
	PAP	Pearson correlation	0.353
		P value	0.005
Section	**Variable**		**PAP**
	MPA-D	Pearson correlation	0.306
		P value	0.015

MPA-D: Mean of pulmonary artery diameter, PAP: Pulmonary artery pressure, NT-proBNP: N Terminal pro-B-type Natriuretic Peptide

Comment 14: *I think legend of table 3 is misleading. My recommendation is as follows: "Table 3-Relationship of PAP, MPA-D and NT-proBNP among patients: A-Comparison of PAP and NT-proBNP in different subgroups determined based on the MPA-D levels. B-Comparison of MPA-D and NT-proBNP in different subgroups determined based on the PAP "levels*

Response 14: We acknowledge that it might be better to replace mentioned sections. So, we :have replaced these two parts in the revised manuscript

Table 3. Relationship of PAP, MPA-D, and NT-proBNP among patients: Section A-Comparison of PAP and NT-proBNP in different subgroups determined based on the MPA-D

levels. Section B- Comparison of MPA-D and NT-proBNP in different subgroups determined based on the PAP levels

	Variable	MPA-D (mm)	Number (percentage)	mean ±standard deviation	p-value
Section A	PAP (mmHg)	30>	(25.3) 16	41.06±12.40	0.221
		30≤	(74.7) 47	54.45±16.59	
	NT-proBNP (pg/ ml)	30>	(25.3) 16	1533.75±2024.12	0.009
		30≤	(74.7) 47	4150.81±2762.91	
	Variable	**PAP (mm Hg)**	**Number (percentage)**	**mean ±standard deviation**	**p-value**
Section B	MPA-D (mm)	20-40	(27) 17	30.94±6.86	0.126
		41-60	(50.7) 32	33.31±4.70	
		60<	(22.3) 14	34.79±4.26	
	NT-proBNP (pg/ ml)	20-40	(27) 17	2294.71±2352.38	0.042
		41-60	(50.7) 32	3528.91±2838.03	
		60<	(22.3) 14	4835.21±2860.13	

MPA-D: Mean of pulmonary artery diameter, PAP: Pulmonary artery pressure, NT-proBNP: N Terminal pro-B-type Natriuretic Peptide

---

Comment 15: *Table 2 legend should be: "Correlation coefficient of NT-proBNP with age, "MPA-D and PAP*

Response 15: As the respected reviewer suggested, we changed the *Table 2 legend*. The article has been revised in this regard:

Table 2. Section A- The correlation coefficient of NT-proBNP with age, MPA-D, and PAP. Section B- The correlation coefficient of PAP and MPA-D

	Variable		NT-proBNP
Section A	Age	Pearson correlation	0.008
		P value	0.937
	PAP	Pearson correlation	0.444
		P value	<0.001
	MPA-D	Pearson correlation	0.353
		P value	0.005
Section B	Variable		PAP
	MPA-D	Pearson correlation	0.306
		P value	0.015

MPA-D: Mean of pulmonary artery diameter, PAP: Pulmonary artery pressure, NT-proBNP: N Terminal pro-B-type Natriuretic Peptide

---

.**Comment 16:** *Please correct "NT-Po-BNP" in line 157*

Response 16: Regarding the respected reviewer's comment, we have revised the manuscript as follows:

Caravita, et al. (19) concluded that in patients with connective tissue disorders and PAH, PAP is positively correlated with NT-proBNP.

We hope that you will find our manuscript acceptable for publication in "The Iranian Radiology Journal".

Sincerely yours

Fahimeh Zeinalkhani, MD, Assistant Professor of Radiology, Imam Khomeini Hospital,

Tehran University of Medical Sciences, Tehran, Iran

3 Revision 2

1 comment · 6 Jun 2023

Editor-in-Chief

ACCEPT 6 Jun 2023

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