Innovative Journal of Pediatrics
Volume 33 · Issue 1 · e130372

OPEN PEER REVIEW

Factors Associated with Successful First-attempt Puncture in Pediatric Patients Undergoing Ultrasound-guided Peripherally Inserted Central Catheter

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SUBMITTED	REVISED	ACCEPTED	DOI
9 Aug 2022	22 Oct 2022	15 Nov 2022	10.5812/ijp-130372

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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Contents

1 Original submission Referee 1 2
2 Revision 1 3
Authors' reply to reviewers 4
Reviewer and editor comments 7

1 Original submission

1 comment · 26 Sep 2022

Referee 1 Reviewer

MAJOR REVISION 26 Sep 2022

Dear authors, thank you for choosing our journal for your submission. The following are my comments on your manuscript:

Abstract:
- Correct the conclusion section based on the following comments on the manuscript.

Introduction:
- Line “35”: Substitute “veins” for “vein”.

Material and methods:
- Study design and participants:
1) It is not clear whether the mentioned exclusion criteria apply to PICC insertion in general or are the specific exclusion criteria you considered for your study protocol.
- Data collection:
1) You mentioned “disease course, medications, treatment course, number of PICC, and PICC insertion history” as your studied variables; however, later in the manuscript, they were not included in your results.
2) Explain more about your own strategies for patient cooperation and sedation.

Results:
- It would be better to categorize the patients’ underlying diseases further.
- Table 1: You subdivided age into 4 groups, but it is not clear which age group the mentioned p-value (0.0001) belongs to. For example, is age <1 year significantly correlated with PICC failure, or is another age group? This comment is also relevant to all other parameters in Table 1.

Discussion:
- In lines 192-198, you explained that “the timing of lidocaine administration should be advanced to reduce pain and thus improve cooperation” and also speculated that “the combined use of midazolam and dexmedetomidine would further improve compliance with the procedure and success rate”; how did you come to this conclusion? These were not among your studied variables! This comment is also relevant to lines 210-218, about the ultrasound view during PICC insertion and the conclusion you drew. In the discussion section, you should not mention the conclusions you drew from your experiences and observations; please make suggestions based only on your studied variables and statistically proven results, not your own opinion.

Conclusion:
- It is strongly recommended that you rewrite this section based on your own statistically proven results (mention the main results in Tables 2 and 3).

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.

Response Letter

Reviewer 1 comments and our responses

1. Abstract:

- Correct the conclusion section based on the following comments on the manuscript.

Response: It has been revised according to your suggestion: The degree of cooperation, target vein diameter and depth, and catheter specification were independently associated with the first-attempt success rate.

2. Introduction:

- Line “35”: “veins” substitute for “vein”

Response: You are right. I have substituted.

3. Material and methods:

- Study design and participants:

1)it’s not clear that the mentioned exclusion criteria are for PICC insertion as a whole, or are the specific exclusion criteria you considered for your study protocol.

Response:

the mentioned exclusion criteria are for PICC insertion as a whole

Data collection:

2) You mentioned “disease course, medications, treatment course, number of PICC, and PICC insertion history” as your studied variables; however, further in the manuscript, they were not among your results.

Response:

Your suggestion is right. I choose to delete it.

3) Explain more about your own strategies of patient cooperation and sedation.

Response:

For sedation, we used a combination of sedation and analgesia: before disinfection of the skin, 0.3mg/kg of Midazolam injection was diluted and injected intravenously; Before puncture, 0.1-0.2ml of 2% lidocaine was used to give local anesthesia at the puncture site.

Signs of cooperation without sedation: usually school-age children, able to communicate effectively, voluntarily lying on the manipulation bed, while maintaining physical immobility;

The manifestation of cooperation after sedation: the child is quiet, the puncture limb is not active, but there is involuntary muscle contraction;

Signs of uncooperation after sedation: crying, uncontrolled movement of limbs.

4.Results:

- It was better to more categorized the underlying disease of the patients.

Response:

On the one hand, the research object of this study is mainly the first two types of diseases, on the other hand, it is in the consideration of statistical analysis, so it is classified.

- Table 1: you subdivided age into 4 groups, but it is not clear that the mentioned p value (0.0001) belongs to which age group? For example, age <1 year is correlated significantly with PICC failure or other age group. This comment is also relevant for all other parameters in table 1.

Response:

In Table 1, age groups were divided into 4 groups. Through chi-square test, it was concluded that the success rate of one puncture of different age groups was statistically different, and there was a statistical association. That's what $P < 0.0001$ means.

*5.*Discussion:

- In lines 192-198, you explained that “the timing of lidocaine administration should be advanced to reduce pain and thus improve cooperation” an also speculated that “the combined use of midazolam and dexmedetomidine would further improve compliance with the procedure and success rate”; how did you come to this conclusion? There are not among your studied variables! This comment is also relevant to line 210-218, about the ultrasound view during PICC insertion and the conclusion you made. In the discussion section, you should not mention the conclusions you drawn from your experiences and observations; please only made suggestion based on your studied variables and statistically proved results, not your own opinion.

Response:

You are right. I have decided to delete this part

6.Conclusion:

- It is strongly recommended to rewrite this section based on your own statistically proved results (mention the main results on table 2 and 3.)

Response:

Rewrite according to your suggestion:

In this study, univariate logistic regression analysis showed that age, weight, type of disease, degree of cooperation, target vein diameter, catheter size, and number of catheters were associated with first puncture failure.

Multivariate logistic regression analysis showed that non-coordination after sedation, target vein depth, target vein diameter and catheter size were independently associated with the failure of the first puncture. We cannot change the venous condition and catheter specification, perhaps through multi-department team cooperation, improve the degree of cooperation after sedation, can improve the success rate of children's first puncture. This needs further research.

Reviewer 2 comments and our responses

1. Page 4, Lines 28, 29 in key words: please insert the word ultrasound and omit Successful first-attempt puncture and adolescent

Response:
Take editor2's advice: add 'ultrasound' and remove ' successful first puncture' and ''Adolescent"

2. Page6, lines 100,101 in data collection: you write the diameter and depth of the vein selected for puncture were measured by ultrasonography. Do you obtain these findings from electronic medical records?

Response:
This is obtained by ultrasound evaluation of blood vessels by a specialist nurse before puncture, not electronic medical records.

3.How do you know the level of patient cooperation during PICC insertion? Is it written in electronic medical records, too?

Response:
The degree of cooperation of children can be distinguished by different clinical manifestations. The information needed for the study was recorded in excel, designed by the researchers, rather than in an electronic medical record.

2 Revision 1

0 comments

No public comments in this round.