

Noninvasive Blood Pressure Cuff-Induced Complications in Intensive Care Unit Patients

Dear Editor,

The Intensive Care Unit (ICU) has a complex and multifaceted structure, which provides continuous and focused monitoring, acute and continuous care of patients suffering from critical illness. In general ICU, expert health-care providers and nursing personnel are employed and more advanced medical equipment is provided for a created context to continuously monitor vital signs of emergency and critical patients, especially after major surgeries.^[1]

Hemodynamic monitoring is a routine procedure in the ICU. Symptoms such as blood pressure, central venous pressure, heart rate, respiratory rate, and oxygen saturation are continuously measured and monitored. Measuring blood pressure is the most important way in managing hemodynamically unstable patients. Direct measurement of arterial pressure (invasive blood pressure [IBP]) is the gold standard; nevertheless, this method has many disadvantages, such as calibration procedures, risk of bleeding, and infection. Hence, an IBP is not recommended on a routine basis. Therefore, noninvasive blood pressure (NIBP) measurement is preferred.^[2,3] NIBP monitoring is not without risk and local complications such as vasculitis, ecchymosis, petechiae, and hematoma are reported to occur in some of the patients.^[4,5] These are more serious, especially in overweight patients, those with edema of the limb, the presence of underlying diseases such as hypertension, diabetes mellitus, and organ failure. Hemodynamically unstable patients who need monitoring for potentially serious conditions are reported to develop serious complications either. The current evidence and clinical expert experience show that the patients in ICUs are at higher risk for arm ecchymosis, petechiae, Rumpel Leede phenomenon, nerve injury, soft tissue, skin injury, and pressure ulcer in the context of hemodynamic instability, multi-organ failure, limb edema, and underlying diseases such as diabetes mellitus. In fact, neglecting to take care of the automated blood pressure cuff has been concerned producing complications that can lead to dissatisfaction and discomfort in conscious patients.^[5,6] Hence, routine care of the cuff is suggested during the daily shift.

Considering that bedside monitoring devices should be set by the ICU nurse or physicians, it is recommended that the time interval of blood pressure measurement take place as often as possible. For example, a longer time interval of blood pressure measurement during a routine monitoring for stable patients can be set every 2 h. Moreover, for unstable patients and who suffer from limb edema, it is recommended to periodically change the placement of the cuff bladder. Using a cuff bladder with the appropriate size according to the patient's arm circumference, not placing the cuff on bare skin, and applying the cuff on thin clothing that does not interfere with blood pressure monitoring are recommended to reduce the complications.

Acknowledgments

The authors would like to thank head nurse of the central ICU of the Shohadaye Haft-e Tir Hospital.

Financial support and sponsorship

Nil.

Conflicts of interest

Nothing to declare.

**Kurosh Jodaki¹, Sayed Mahdi Marashi²,
Seyed Alireza Hasani³**

¹Assistant Professor of Nursing, School of Nursing and Midwifery, Shohadaye Haft-e Tir Hospital, Iran University of Medical Sciences, Tehran, Iran,

²Department of Forensic Medicine, School of Medicine, Iran University of Medical Sciences, Tehran, Iran, ³Department of Nursing, School of Nursing and Midwifery Amol, Mazandaran University of Medical Sciences, Amol, Iran

Address for correspondence:

Dr. Kurosh Jodaki,
Shohadaye Haft-e Tir Hospital, Iran University of
Medical Sciences, Tehran, Iran.
E-mail: kuroshjodaki@gmail.com

References

- Woodrow P. Intensive Care Nursing: A Framework for Practice. Routledge; 2018.
- Li-wei HL, Saeed M, Talmor D, Mark R, Malhotra A. Methods of blood pressure measurement in the ICU. *Crit Care Med* 2013;41:34-40.
- Saugel B, Dueck R, Wagner JY. Measurement of blood pressure. *Best Pract Res Clin Anaesthesiol* 2014;28:309-22.
- Pedley CF, Bloomfield RL, Colflesh MJ, Porcel MR, Novikov SV. Blood pressure monitor-induced petechiae and ecchymoses. *Am J Hypertens* 1994;7:1031-2.
- Ventura-Ribes O, Machancoses FH, Remírez JFR. Vasculitis after blood pressure monitoring. *Reumatol Clin* 2016;12:216-8.
- Elmatite W, Mangla C, Upadhyay S, Yarmush J. Perioperative automated noninvasive blood pressure-(NIBP-) related peripheral nerve injuries: An Anesthetist's dilemma—A case report and review of the literature. *Case Rep Anesthesiol* 2020; 2020:5653481.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online

Quick Response Code:



Website:

<https://journals.lww.com/jnmr>

DOI:

10.4103/ijnmr.ijnmr_233_23

How to cite this article: Jodaki K, Marashi SM, Hasani SA. Noninvasive blood pressure cuff-induced complications in intensive care unit patients. *Iran J Nurs Midwifery Res* 2024;29:493.

Submitted: 06-Aug-2023. **Revised:** 19-Nov-2023.

Accepted: 18-Apr-2024. **Published:** 24-Jul-2024.

© 2024 Iranian Journal of Nursing and Midwifery Research | Published by Wolters Kluwer - Medknow