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Short Communication

Monitor error in ICU

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Abstract: Multipara monitors are an integral part of any ICU set up. Abnormally displayed values on the screen can be due to technical errors in the monitor itself. Awareness about 'monitor errors' can prevent unnecessary interventions and timely correction of the underlying problem. I am reporting a case of abnormal values of non-invasive blood pressure in a multipara monitor. Such false values have not been reported before.
Keywords: Monitor error, multipara monitor, ICU, NIBP

INTRODUCTION

Vital sign recording is one of the most important tools in monitoring the clinical status of a patient in any hospital setting. Multipara monitors take care of this job in an intensive care unit (ICU) and provide continuous real time information about the patient. Errors in recording any of the vital signs including non-invasive blood pressure (NIBP) can result in wrong treatment and adverse outcome. There is scarcity of data in this regard.

SHORT COMMUNICATION

We recently observed an abnormal value of blood pressure on a multipara monitor (L&T, Star 50) in our ICU (Fig.1). Such abnormal values of blood pressure due to the technical problem in the monitor have not been reported before.

Fig: 1 Monitor showing false value of NIBP

Traditionally, the auscultatory technique of blood pressure measurement as described by Riva-Rocci and Korotkoff has provided most of the data on hypertension diagnosis and treatment. With advancement of science and technology in medical field, multipara monitors came into existence. These monitors measures NIBP by 'oscillometric' technique. Each manufacturer of automatic oscillatory devices has its own algorithm for deriving systolic and diastolic pressures from the measured mean blood pressure. As a result, readings from one device may differ slightly from another device.

Apart from giving automatic measurements at fixed intervals, multipara monitors are free from inter-observer variations, thus allowing long-term blood pressure monitoring. However, one should take due precautions while measuring NIBP. Medical personnel generally do not fully appreciate the extent of degradations in accuracy of measurement, because NIBP provides no waveform display to allow visualization of artifact disruption as in electrocardiography and pulse oximetry. More attention is required in critically ill patients while measuring NIBP. Application of modified algorithms for measurement and more careful cuff selection can improve the accuracy of oscillometric blood pressure readings in critical patients [1]. Appropriate size blood pressure cuff is important for accurate recording of blood pressure as too narrow or too wide cuff in relation to patient's arm circumference can result in over or under estimation of NIBP respectively. A cuff with a bladder of an adequate size capable of covering around 80% of the arm is recommended. Accuracy of the automated device may also be limited if patients are hypertensive [2] hypotensive [3] and/or have cardiac dysrhythmia [4]. Underestimation of NIBP has also been reported in older patients due to stiffness of arteries.

All these potential causes of error were ruled out in the reported case. Rest of the displayed parameters of the patient were normal. Moreover, the clinical examination was also unremarkable. The NIBP was rechecked on the other multipara monitor and was 130/90 mm Hg. This abnormal value of NIBP continued for about two hour, after which the monitor's module was opened and cleaned by a service engineer. The monitor started functioning normally. No satisfactory explanation for this error was given by the manufacturing firm.

CONCLUSION

This report highlights that errors can happen in these advanced multipara monitors. An unremarkable clinical examination complemented with normal remaining vitals can help in picking up technical error thus avoiding wrong treatment.

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