

Abstract

The accuracy of the replacement of oxygen saturation using Pulse Oximetry (SpO₂) instead of Arterial Oxygen Pressure obtained from the analysis of Arterial Blood

Gases (PaO₂) in the oxygenation index calculation in pediatrics

Author: Farinaz Amirikar M.D. – Supervisor: Nemat Bilan M.D.

Department of Pediatric Diseases, Kudakan Hospital, Faculty of Medicine, Tabriz University of Medical Sciences

Background: Pulse oximetry has undergone the intensive care unit is used as a guide therapeutic intervention. Few studies on the accuracy of pulse oximetry in pediatric intensive care unit were made. The aim of this study was to evaluate the reliability of the replacement of oxygen saturation using pulse oximetry (SpO₂) instead of the arterial oxygen pressure from arterial gas analysis (PaO₂) in the oxygenation index in children and to evaluate the effect indicators acidosis and alkalosis that is different.

Objectives: Survey of SpO₂ validity in measurement of Oxygenation Index

Method and materials: In this study, 100 patients admitted to the intensive care unit (PICU) Tabriz Children's Hospital were studied. On a routine basis when the need for arterial blood gas analysis, the samples and pulse oximetry were recorded at the same time. Sampling was in this way that the routine blood sampling, the blood was 2ml. The blood samples were taken by the ABG. At the same time using pulse oximeter oxygen saturation were recorded. In all patients Stock oxygenation in patients using two variables obtained SpO₂ obtained by pulse oximetry and PaO₂ obtained from gas analysis of the arterial blood is calculated and the degree of overlap between the values obtained in the two groups and the Accuracy pulse oximetry, arterial blood gas analysis were used instead.

Results: In this study there was a significant relationship between the level of blood PH SpO₂ values. Relations between blood PH levels of oxygenation index (OI) based on the values of PaO₂ and oxygenation index (OI) by SpO₂ was significant. Blood PH levels FiO₂ values prescribed for patients significantly. Also a significant association between hemoglobin values prescribed FiO₂, oxygenation index (OI) and PH values there. Linear relationship between arterial bloods PaO₂ to SpO₂ measured by pulse oximetry was also approved and also the relevance of the oxygenation index

(OI) was also available. Its hemodynamic status of patients with oxygenation index, FiO_2 used in arterial blood HCO_3 values were significant.

Conclusion: Confirmation of the linear relationship between arterial blood PaO_2 to SpO_2 measured by pulse oximetry, replace the use of pulse oximetry in children (as a non-invasive method) instead of arterial blood gas study (as an invasive procedure) in oxygenation index calculation seems reasonable, but further investigation is needed.

Key words: Pulse Oximetry, Arterial Blood Gases, Oxygenation Index