CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
http://doi.org/10.5281/zenodo.3244212

Available online at: http://www.iajps.com *Research Article*

ANALYSIS OF BLOOD GAS IN NEWBORNS SUFFERING FROM DISTRESS OF RESPIRATION SYSTEM

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Article Received: April 2019 **Accepted:** May 2019 **Published:** June 2019

Abstract

Objective: *The aim of this research work is to observe the aptness of the analysis of blood gas in the newborns suffering from the distress of respiration system.*

Methodology*: We conducted this research work in the Pediatric ICU of Allied / DHQ Hospital Faisalabad. All the newborns who got admission in the Pediatric ICU with symptoms of distress of respiration system were the part of this research work. These new births were getting only oxygen as a support for respiration. No neonate intubated or obtained ventilation's positive pressure ventilation. We reviewed the records of 16 patients who got admission for analysis of the blood gas.*

Results: *Except for 2 patients, no patient found with hypoxemia (PaO2 less than eighty mmHg). In the same manner, only 2 patients were available with acidosis (pH value of less than 7.3) whereas only one neonate was available with hypercarbia (PaCO2 of greater than 40.0 mmHg). The excess of the base & measurement of the bicarbonate, in majority of patients, were available in normal ranges.*

Conclusions: *The analysis of the blood gas were normal in most of samples prescribing that unsuitability & needless utilization of full of pain & very expensive method in otherwise stable neonates suffering from the distress of respiration system. Depending upon these results, a substitute methodology, a blend of the clinical aspects, reading of pulse oximeter & results of the X-ray of chest is the suggestion that can be very effective in the administration of the newborns suffering from the distress of respiration system. The main destination is to reduce the overutilization of the invasive agonizing process.*

Key Words: *Oximetry, X-Ray, Overutilization, Invasive, Agonizing, Respiration, Distress, Hypoxemia.*

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Please cite this article in press Ayesha et al., ***Analysis Of Blood Gas In Newborns Suffering From Distress Of Respiration System.,*** *Indo Am. J. P. Sci, 2019; 06[06].*

INTRODUCTION:

The analysis of the blood gas is very frequent normal routine examination at admission time of newborn who appears with the distress of respiration system with the aim of knowing the status of acid base & to determine the requirement for the intervention. The previous research works have displayed that professionals has used the analysis of blood gas excessively [1-4]. The analysis of the blood gas when drained from the puncture of capillary or arteries, is a procedure full of pain full al puncture, so there should be a minimum use for its utilization. Automatic analyzers a basic requirement for the application of this procedure, this method is also very time taking and it needs a lot of time for its completion.

Additionally, to the usage of the analysis of the blood gas, newborns suffering from the distress in respiration system are easily observable clinically & with the utilization of the pulse oximetry. This research work carried out to determine the yield & aptness of analysis of the blood gas conducted on the newborns suffering from the symptoms of distress in respiration system.

METHODOLOGY:

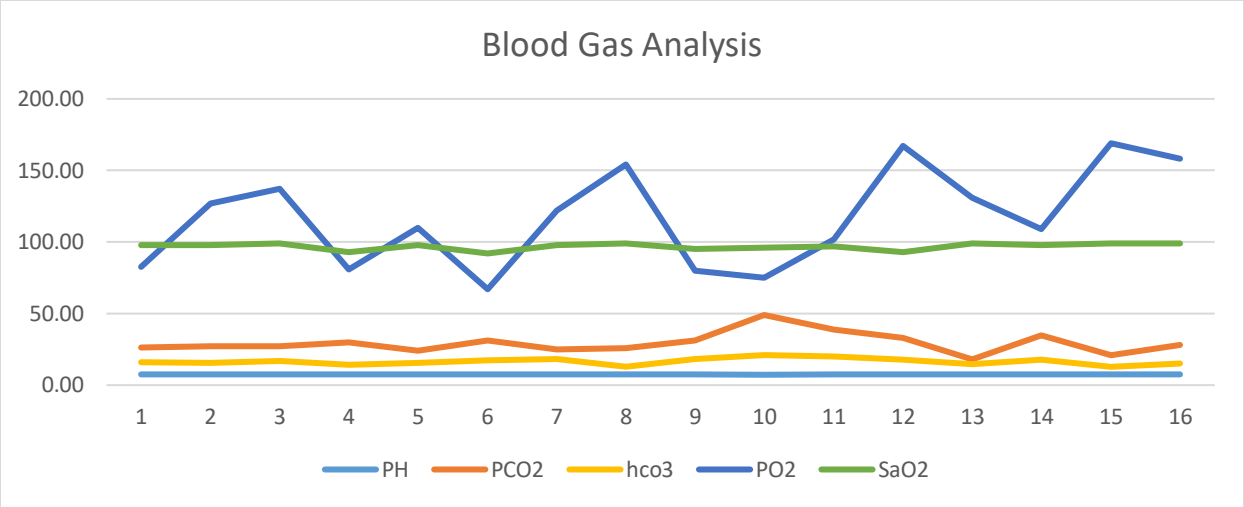
We conducted this review in the Pediatric ICU of Allied / DHQ Hospital Faisalabad. All the neonates who got admission in the Pediatric ICU having symptoms of distress in respiration system from March 2018 to July 2018 were the part of this research work. The newborns were only obtaining the oxygen as a support for respiration system. No patient received intubation or got ventilation of positive pressure. We reviewed the records of all the 16 neonates having admission in the ICU for analysis of the blood gas as available in the Table-1. The ethical committee of the hospital gave the permission to conduct this research work. We took written willing from the parents of those neonates to ensure their participation in the research work. SPSS V. 17 was in use for the statistical analysis of the collected information.

RESULTS:

Table-1is summarizing all the outcomes of this research work. Most of the analysis of the blood gas were the arterial puncture. At the duration of the analysis of the blood gas, all newborns were obtaining fraction inspired oxygen with a changing quantity from 30.0 to 50.0%. Apart from only two patients {patient 6, 10}, no patient was available with the hypoxemia (PaO2 less than 80.0 mmHg). In the same manner. Only two patients {patients 4 & 10} were available with acidosis (pH value of less than 7.3) whereas only single patient found with hypercarbia (PaCO2 value of greater than 40.0 mmHg). The excess of the base & measurement of the bicarbonate, in majority of the patients were also available in the normal range.

Table-I: Results of Blood Gas Analysis

Case	PH	PCO2	Base Excess	hco3	PO2	SaO2
1	7.40	26.20	-6.00	16.10	82.7	98.0
2	7.35	27.00	-8.30	15.60	127.0	98.0
3	7.40	27.00	-5.50	16.90	137.0	99.0
4	7.29	30.00	-10.40	14.40	81.0	93.0
5	7.43	24.00	-5.80	15.70	110.0	98.0
6	7.36	31.00	-5.90	17.50	67.0	92.0
7	7.37	25.00	-5.50	18.10	122.0	98.0
8	7.30	26.00	-11.10	13.00	154.0	99.0
9	7.38	31.00	-5.00	18.20	80.0	95.0
10	7.25	49.00	-5.90	21.00	75.0	96.0
11	7.33	39.00	-5.00	20.00	102.0	97.0
12	7.33	33.00	-6.90	17.90	167.0	93.0
13	7.51	18.00	-4.40	14.60	131.0	99.0
14	7.32	35.00	-6.70	18.00	109.0	98.0
15	7.39	21.00	-9.00	12.80	169.0	99.0
16	7.35	28.00	-8.10	15.30	158.0	99.0



DISCUSSION:

With the symptoms of the respiratory distress, the most important indication for attaining a blood gas is to determine the condition of oxygenation {PaO2} & ventilation {PaCO2 and pH}. The awareness about the bicarbonate & base excess are best for support in differentiation of the kinds of acidosis but is not main purpose in patients of such respiratory issues. In the recent research work, we recorded that acid base condition of the group was basically normal which displayed that the analysis of the blood gas of neonates at the time of admission suffering from distress of respiration system was not of much support in making the decision about the intervention. Our outcome of adverse yield & needless utilization of the analysis of the blood gas is much same with the research works of past conducted on the adult patients suffering from this very clinical issue [1-4].

Another feature of the analysis of the blood gas is its association with pain & economical cost. The perception of the pain is widely available in records [5]. The exposure to pain increases with the virtue of the invasive method conducted in the pediatric ICU [6]. The analysis of blood gas is invasive method to newborns, here should be avoidance from it if its application is no compulsory. To hinder the invasive methods with full of pain, there should be exploration of the other substitute methods which should be a blend of clinical, findings of X-ray & pulse oximetry. The utilization of the method of pulse oximetry, as non-invasive substitute was available in the research works conducted in the past [7, 8]. Pulse oximetry among newborn suffering from the distress of the respiration system with no need of assisted ventilation has benefit over the analysis of the blood gas because of the reality that this is noninvasive, recyclable method. The application of this procedure is much necessary in the research of fully busy nursery with very restricted source of the equipment.

We propose a substitute procedure that may be effective in decreasing the amount of the analysis of the blood gas. Among newborns with fully developed tachypnea, the decision should be on the basis of blend of medical aspects (level of the tachypnea's degree, level of the requirement of the oxygen, cyanosis), the reading of the pulse oximeter, incidents of de-saturations) & a solitary view of the X-ray of the chest. The point of the emphasis is not only the economic cost in the analysis of the blood gas but also the painful duration in the method of the puncture of arteries in newborns where there is no sign for the indwelled catheters. A newborn who is tachypneic (rate of respiration of sixty per minute) without sub-costal or suprasternal repudiation, saturating 95.0% on 30.0% oxygen, with normal X-ray of the chest should be under observation securely without any invasive calculation of the blood gas as most possible it will be inside the normal values of limitations, as examined in our review.

There is a requirement of further research works on the newborns suffering from the distress of respiration system with no need of the linked ventilation with at least one group with noninvasive checking procedure whereas other group with analysis of the blood gas for the validation of the findings of this research work fully explored in this research work.

CONCLUSIONS:

The common needless utilization of the analysis of blood gas analysis in otherwise stable neonates suffering from the distress of respiratory system should be without encouragement on the basis of the results of this research work. With not performing the analysis of the blood gas among newborns who appeared with tachypnea the probabilities of missing the disease is remote. This feature is the addition to the decrease in the administration of the cost & severe painful invasive procedure. There is a suggestion of a substitute methodology of blending a good medical assessment with X-ray of chest & pulse oximetry that can be securely in utilization at the early examination of newborns. Studies in future will help a lot for the consolidation of the findings of this research work.

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