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Effect of Right lateral Position on Blood Oxygenation of Premature Infants after Weaning from Mechanical Ventilation

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Abstract:
Background: Positioning is an important tool to improve the efficiency of respiratory function and it is one of the important nursing duties. **Aim:** of this study was to assess effect of right lateral position on oxygenation of premature infants after weaning from mechanical ventilation. **Research design:** A quasi-experimental research design was used **Subjects and Setting:** A convenient 60 premature infants within 2 hours after weaning from the mechanical ventilation were included in the study in neonatal intensive care unit (NICU) at Assiut University Children Hospital. They divided to two groups (the control and the study) **Tools:** Two tools were developed to collect data of the present study**. Results:** At the end of the 6[th] 20 minutes after weaning from mechanical ventilators mean ± SD SaO_2 (%) of premature infants in the right lateral position was (95.90 ± 1.95) compared by (92.27 ± 2.41) among Premature infants in the control group. Statistically significant differences were found between the two groups related their PH, and respiratory rate. **Conclusion:** Premature infants placed on the right lateral position had higher SaO_2 (%) and lower complications as breathing difficulty and /or apnea than others. **Recommendations:** Right lateral position should be used in the routine care of infants weaning from mechanical ventilation.

Keywords:* *Neonate, Oxygenation, Premature infants, Right lateral position & Weaning from Mechanical Ventilation.

Introduction:

Preterm newborns had considered as a highly vulnerable group of the population who require advanced medical management and a highly specialized nursing care to thrive and survive. Around 15 million neonates are born preterm and this number is increasing each year that is more than one in ten newborns **(Moxon et al., 2021).** There was estimated that an average of 127 cases admitted Assiut University children Hospital in the month with total 1511 neonates during 2018 year (**Assiut University children Hospital records, 2020**)

Many studies were documented that preterm infants facing common problems after birth such as lung tissue prematurity and respiratory distress syndrome which clarify the need for extraordinary consideration for respiratory care. Management using oxygen therapy and mechanical ventilation is applying according to the infant's needs; however administering high oxygen concentration can lead to pulmonary damage and subsequently chronic lung problems. As well as, prematurity has lifelong impact on preterm infants such as vital signs instability, hemorrhage and respiratory distress syndrome (RDS). So, the use of proper care measures in neonates after weaning from the mechanical ventilation with the aim of decreasing the necessity for oxygen are important measures in neonatal intensive care units **(Douros & Everard, 2020), (Mahoney & Jain. (2013).**

Brunse et al., 2021, noted in their study that lung immaturity is accounted as the main risk factor for mortality or morbidity in preterm neonates next to the immature brain, which is a compact the lung function. Neonates born at or less than 32 weeks of gestation have immature lungs with impaired gas exchange. Most of these preterm neonates are at high risk for respiratory failure and their primary care includes respiratory function promotion. Mechanical ventilation (MV) is necessary when ill preterm neonates are treated. It is usually using for a short time, but in some cases may be used for a long period, which was linked with adverse health effects and impaired long-term respiratory and developmental outcomes
(Mohamed et al., 2021).

Weaning from the MV is usually achieved by gradually decreasing of the ventilator support level until the settings are reduced to remove support. Considerable controversy persists regarding the best ways to accomplish this goal, but some general, evidence-based guidelines can be established. **(Wielenga et al, 2016).**

Premature infants positioning is a basic method of neonatal nursing care that involves lying on one's side, prone and head tilted-up positions. Preterm neonates' different body positioning has an impact on a variety of their outcomes. **(El-Nagger & Bayoumi et al, 2016).**

Repositioning increased lung function by improving respiratory rate (RR).The fact of a "change" in body position leads to a modification in lung function and not just the position on its own **(Brunse et al, 2021).**

Griffiths et al., (2019) noted that preterm neonate needs support to assist and sustain postures that increase motor control, physiological functioning and diminish stress. Positioning also aims to improve various respiratory outcomes, which may eventually aid in early weaning so decreasing the overall period of mechanical ventilation**.**

Oxygen saturation is affected by the body's position. According to scientific studies, positioning helps premature infants breathe better and improve oxygenation, reduce gastroesophageal reflux episodes, and reduce thoraco-abdominal asynchrony. Positioning usually requires more vigilant care by the Intensive Care Unit (ICU) nurse (**Hassan et al., (2020).**

Nurses who are caring of neonates undergoing MV face numerous encounters. Nurses' experience and safe care are significant features in giving an effective nursing care**.** It has been proven that each mechanically ventilated neonate needs on average one nurse for caring during 60% of the time. The role of NICU nurse is to apply successfully developmental care and the provision of an optimal NICU environment. Neonatal nurses have an important role in improving the quality of care in the NICUs. As well as comforting interventions for premature neonates, this will contribute to high neonatal outcomes. **(Ballout et al., (2017).**

Significance of the study:

There have been few studies about the effects of right lateral positions on the oxygenation of premature infants. **(Torabian et al., (2019)** Right lateral positions could decrease the gastro esophageal reflux. The speed of motor skills and muscle tonicity increased among premature infants nursed in a lateral position; therefore, this position can be paid more attention for premature infants admitted to the Neonatal Intensive Care Unit (NICU) except those who have no stable respiratory condition (**Diwate et al., 2018).**

Furthermore, it has proposed that body positioning is an easy practical and effective intervention as compared with other noninvasive measures. The present study used the right lateral position after weaning from mechanical ventilation, as an alternate strategy. So this strategy might improve oxygenation, decrease complications, and result in positive outcomes.

Aim of the study:

The aim of the current study was to assess effect of right lateral position on blood oxygenation of premature infants after weaning from the mechanical ventilation.

Research hypothesis:

Premature infants who exposed to the Right lateral position expected to have better blood oxygenation during the first 2 hours after weaning from the mechanical ventilation than those in the control group.

Subjects and Method:

Research design:

In this study, a quasi-experimental research design was used.

Setting of the study:

The neonatal intensive care unit (NICU): The NICU has advanced technology and trained healthcare professionals to give special care for the tiniest infants. Most infants admitted to the NICU are preterm (born before 37 weeks of pregnancy), have low birth weight (less than 5.5 pounds), or have a health condition that needs special care. Many of these infants also have low birth weights. Twins, triplets, and other multiples often are admitted to the NICU and infants with health conditions such as breathing trouble, heart problems, infections, or birth defects are also cared for in the NICU.

This study was conducted in the Neonatal Intensive Care Unit (NICU) at Assiut University Children Hospital.

Subjects:

In the study a convenient 60 premature infants within 2 hours after weaning from the mechanical ventilation were included. They were divided randomly to two groups 30 infants in each, the study group (G1) were placed in the right lateral position and the second group (control group) (G2), who exposed to the routine care of the hospital.

Sample size:

The sample was selected by using the following equation according to **Steven Thompson (2012):**

$$n = \frac{N \times p(1-p)}{\left[\left[N - 1 \times \left(d^2 \div z^2\right)\right] + p(1-p)\right]}$$

1-N=Total patient population size of 170 who admitted neonatal intensive care unit at Assiut university children hospital, during year 2019

2-N= 90 Premature infants.

3- Z= Confidence levels is 0.95 and is equal to 1.96.

4-D=the error ratio is = 0.05.
5-P=the property availability.

Tools of data collection: one tool Demographic data of premature infants it divided into two parts:

Part one: Personal characteristic of the studied premature infant: it included gestational age, postnatal age, birth weight, current weight and gender.

Part two: Neonatal assessment: This tool was used to record;

Vital signs:

Respiratory rate (RR), body temperature and heart rate (HR) for premature infants in the two groups.

Capillary blood gas:

PH, $Paco_2$, and oxygen saturation (SaO_2) for premature infants in the two groups.

Presence of complications:

breathing difficulty and presence of apnea for premature infants in the two groups.

Methods of data collection

- A formal permission to collecting the required data for this study was received from the director of the neonatal intensive care unit at the Assiut University Children Hospital.
- Validity of the tool was reviewed by five experts from medical and nursing staff and content validity index was calculated and assessment tool and reassessment of parameters was done to evaluate the effectiveness of right position.
- Reliability was estimated by using assessing the physiological parameters.
- A pilot study was carried out before starting the data collection on 10% (6 premature infants) of the sample, to measure the feasibility and applicability of the tools (II & I) used. According to the result of the pilot study, modifications were made and the final form was used. Premature infants who participated in the pilot study were excluded from the total sample of the study.
- Each premature infant is attached to a pulse oximeter and monitor immediately after being weaned from mechanical ventilation because it is a non-invasive and simple technique.
- Heart rate, respiratory rate and SaO_2 measurement data obtained from the bedside premature infants monitors used in the NICU immediately before positioning as a base line data.
- All premature infants were assessed immediately before positioning for their blood gas levels, vital signs, and as baseline data, the presence of complications such as breathing difficulties and apnea.

Inclusion criteria:

The criteria **for inclusion in the sample of premature** infants **were as follows:**

1. Premature infants being born at gestational age ranged from 30 to 36 weeks.
2. Having no congenital abnormalities.
3. The absence of intracranial bleeding.
4. Premature infants who are wean immediately from the mechanical ventilation.
5. Not having undergone any surgical interventions.

Premature infants divided into 2 groups. The study group G1who met the inclusion criteria placed in the right lateral position, lies on right sides with head little to the right sides and two small towels rolled and placed behind backs for 2 hours.

1. The control group G2 placed according to the routine care in the unit.
2. During this period, arterial blood gas (PH, Hco_3 and Pco_2 levels) recorded for all premature infants in the two groups at the end of the first hour and after two hours of weaning from the mechanical ventilation. Vital signs (HR, RR, body temperature and spo_2) recorded every 20 minutes for all infants in the two groups; occurrences complication was recorded in the two groups (breathing difficulty and apnea).

- A comparison between the two groups was done.

Ethical considerations:

1. Research proposal approved by the Ethical Committee in the Faculty of Nursing, Assiut University.
2. There is no risk for study subjects during the research application process.
3. The study followed common ethical principles in clinical research.
4. Parents must provide written consent to participate in the study after being informed about its nature and purpose.
5. Confidentiality and anonymity are assured.
6. Parents have the right to refuse to participate in and/or withdraw from the study at any time and without giving any reason.

Statistical analysis:

Data entry analyzed and data collected & tabulated using SPSS software statistical computer version 20 & presently appropriate statistical testes used for the analysis of results. Variables compered using the t test and P value = 0.05 considered as significant.

Results:

Table (1): Distribution of the studied premature infants according to their personal characteristics

Groups / Personal data	Right lateral position (n= 30)		Control group (n= 30)		Total (n=60)	
	No.	%	No.	%	No.	%
Gender:						
Male	12	40.0	14	46.7	26	43.3%
Female	18	60.0	16	53.3	34	**56.7%**
Gestational age: (weeks)						
28< 30	12	40.0	12	40.0	24	40.0%
30 < 32	7	23.3	7	23.3	14	23.3%
32< 34	6	20.0	7	23.3	13	21.7%
34 – 36	5	16.7	4	13.3	9	15.0%
Mean ± SD	30.70 ± 2.44		30.77 ± 2.25		30.73 ± 2.33	
Birth weight: (Kg)						
Mean ± SD	0.97 ± 0.17		0.92 ± 0.12		0.94 ± 0.15	
Range	0.7-1.4		0.6-1.2		0.6-1.4	
Postnatal age: (days)						
Mean ± SD	3.60 ± 1.33		2.83 ± 1.39		3.22 ± 1.40	
Range	1.0-7.0		1.0-6.0		1.0-7.0	
Current weight: (Kg)						
Mean ± SD	1.05 ± 0.18		1.02 ± 0.12		1.03 ± 0.15	
Range	0.8-1.4		0.8-1.2		0.8-1.4	
Diagnosis:≠						
LBW	18		18		60.0%	
RDS	29		29		96.7%	

≠ ***LBW:*** *low birth weight* *RDS: respiratory distress syndrome*

Table (2): Comparison between premature infants in the two groups related to their mean± SD SaO_2 (%) during 2 hours after weaning from the mechanical ventilators.

Groups / SaO_2 (%)	Right lateral position (n= 30)	Control group (n= 30)	P-value
1st 20 min/2hrs:			
Mean ± SD	94.53 ± 2.94	92.37 ± 2.47	0.003*
Range	90.0-98.0	90.0-98.0	
2nd 20 min/2hrs:			
Mean ± SD	93.00 ± 5.91	92.07 ± 1.89	0.413
Range	64.0-98.0	90.0-97.0	
3rd 20 min/2hrs:			
Mean ± SD	95.27 ± 1.89	92.50 ± 1.63	0.000*
Range	92.0-99.0	90.0-96.0	
4th 20 min/2hrs/2hrs:			
Mean ± SD	95.80 ± 1.45	92.73 ± 2.15	0.000*
Range	93.0-99.0	90.0-96.0	
5th 20 min/2hrs:			
Mean ± SD	95.23 ± 2.45	93.03 ± 2.30	0.001*
Range	91.0-99.0	89.0-97.0	
6th 20 min/2hrs:			
Mean ± SD	95.90 ± 1.95	92.27 ± 2.41	0.000*
Range	91.0-98.0	90.0-98.0	

**Statistically Significant Differences* *t-test was use*

Table (3): Comparison between premature infants in the two groups related to their mean± SD PH, PCO2 (mmHg) and HCO_3 (mmol/L) during 2 hours after weaning from the mechanical ventilators.

Groups / Items	Right lateral position (n= 30)	Control group (n= 30)	P-value
PH			
1st hour:			
Mean ± SD	7.31 ± 0.08	7.37 ± 0.11	0.044*
Range	7.2-7.5	7.1-7.6	
2nd hour:			
Mean ± SD	7.33 ± 0.09	7.36 ± 0.08	0.166
Range	7.2-7.5	7.2-7.5	
PCO_2 (mmHg)			
1st hour:			
Mean ± SD	39.81 ± 17.04	36.26 ± 16.88	0.421
Range	15.9-101.0	17.0-86.1	
2nd hour:			
Mean ± SD	33.02 ± 9.48	37.89 ± 13.27	0.107
Range	18.9-60.0	13.5-77.0	
HCO_3 (mmol/L)			
1st hour:			
Mean ± SD	22.38 ± 6.59	24.00 ± 3.84	0.248
Range	10.2-46.0	18.6-35.0	
2nd hour:			
Mean ± SD	21.22 ± 4.64	22.98 ± 3.30	0.097
Range	13.8-36.3	19.0-34.0	

*Statistically Significant Differences t-test was used

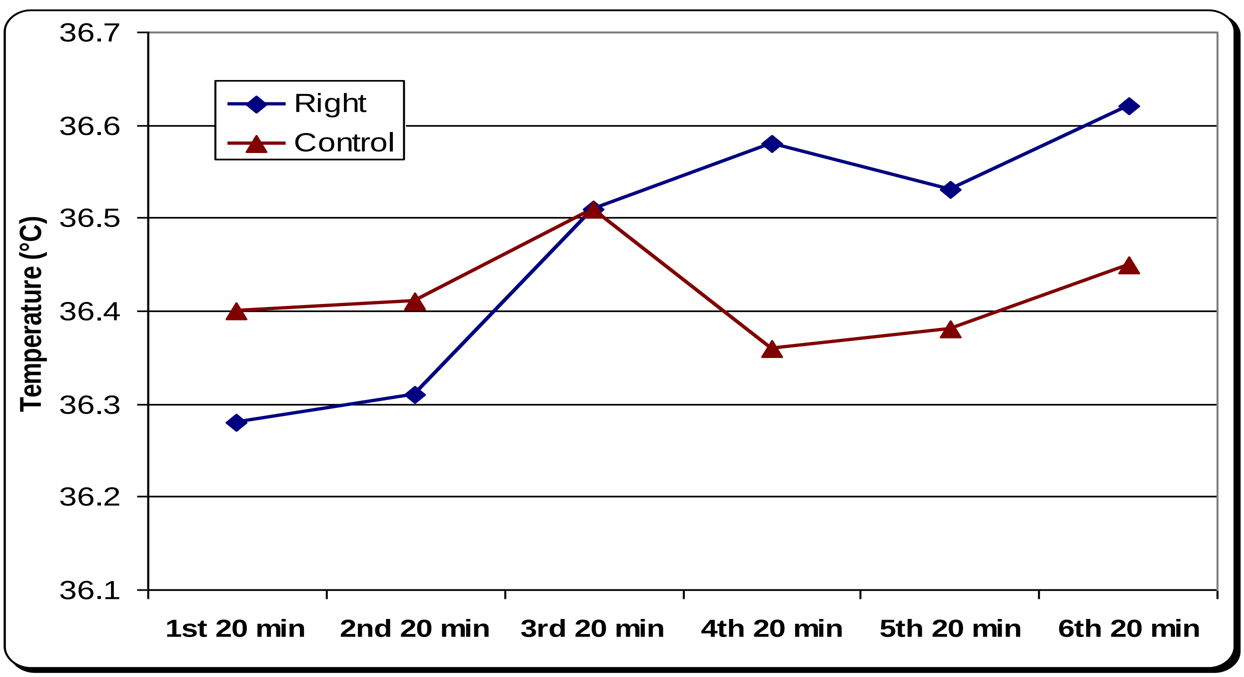

Figure (1): Comparison between premature infants in the two groups related to their mean body temperature (°C) during 2 hours after weaning from the mechanical ventilators.

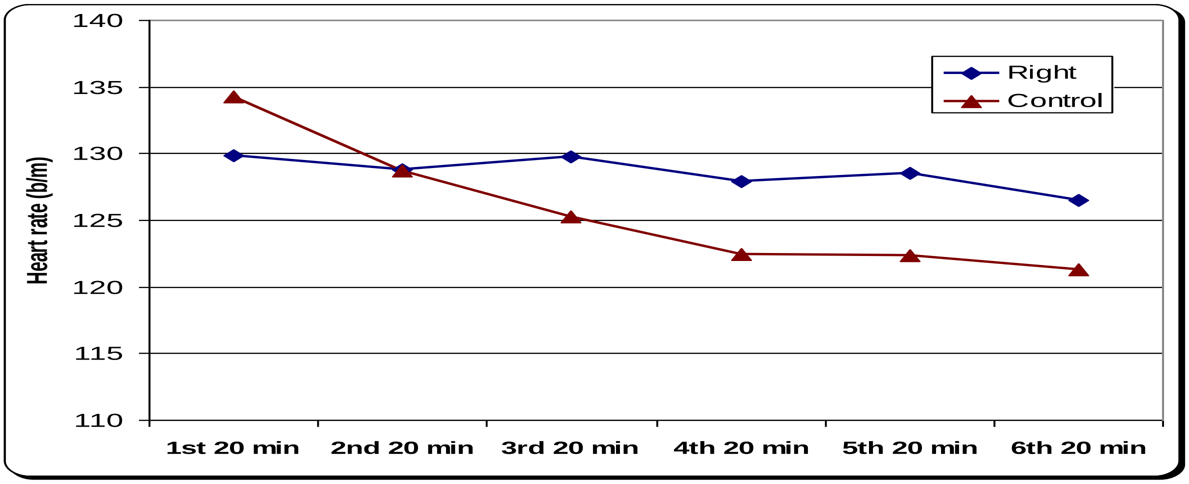

Figure (2): Comparison of premature infants in the two groups related to their mean heart rate (b/m) during 2 hours after weaning from the mechanical ventilators.

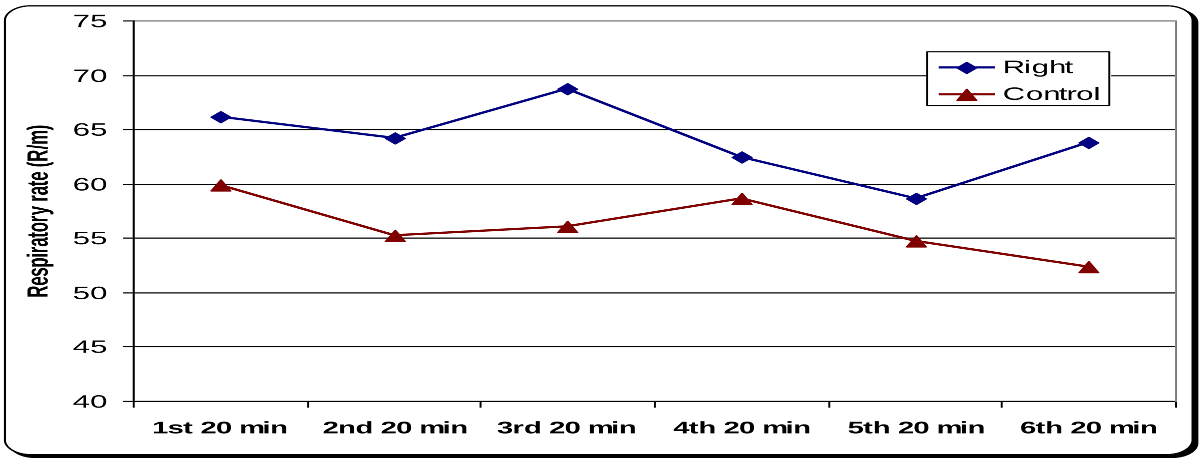

Figure (3): Comparison of premature infants in the two groups related to their mean Respiratory rate (C/m) during 2 hours after weaning from the mechanical ventilators.

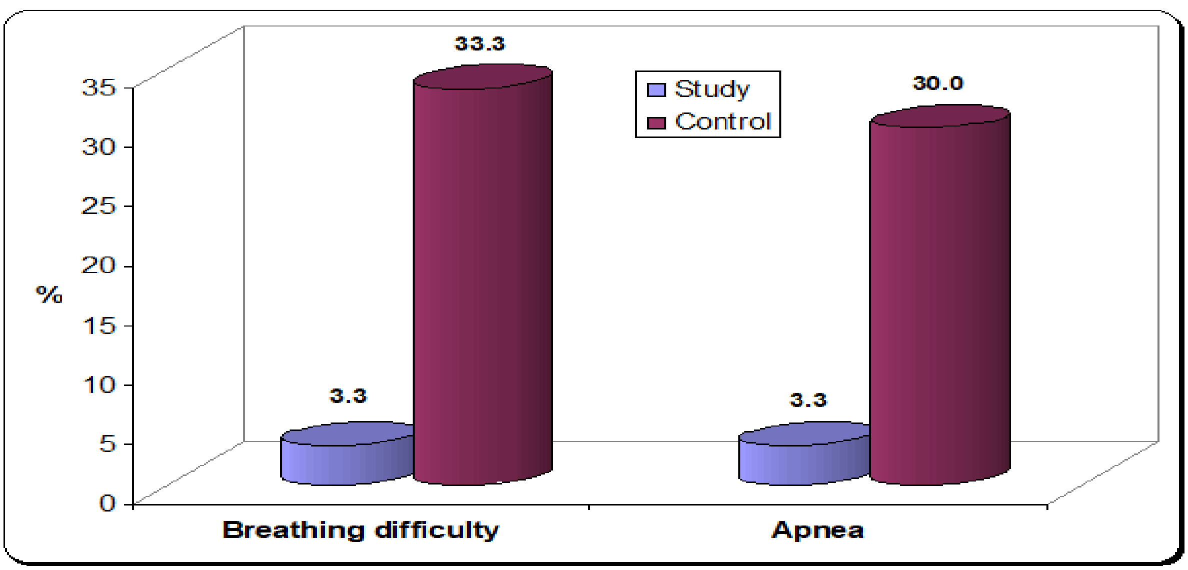

Figure (4) **Comparison of premature infants in the two groups related to the presence of complications after weaning from the mechanical ventilators.**

Table (1): Showed distribution of the studied premature infants according to their personal characteristics, it was found that 56.7% of premature infants in the two groups were females, their birth weight ranged between 0.6-1.4 kg with mean ± SD 0.94 ± 0.15. Mean ± SD of their gestational age and postnatal age were 30.73 ± 2.33 weeks and 3.22 ± 1.40 days respectively. In addition, the table revealed that majority of premature infants (96.7%) had respiratory distress syndrome.

Table (2): Noted the comparison between premature infants in the two groups related to their mean± SD SaO_2 (%) during 2 hours after weaning from the mechanical ventilators, statistically significant differences were found between the two groups throughout the two hours with high rate of SaO_2 (%) among premature infants in the right lateral position than those in the control group at the end of 1^{st}, 3^{rd}, 4th, 5^{th}, and 6^{th} 20-minutes (P= 0.003, 0.000, 0.000, 0.001 and 0.000) respectively.

Table (3): Noted the comparison between premature infants in the two groups related to their mean± SD PH, PCO_2 (mmHg) and HCO_3 (mmol/L) during 2 hours after weaning from the mechanical ventilators. There was a statistically significant difference between the two groups related to Mean ± SD PH in the first hour only p= 0.044, While no statistical significant differences were found between premature infants' PH in the second hour, and PCO_2 (mmHg) and HCO_3 (mmol/L) in the two groups throughout the 2 hours period after weaning from the mechanical ventilators either in the first or in the second hour.

Figure (1): Noted that mean body temperature (°C) of premature infants in the two groups was in the normal range throughout 2 hours after weaning from the mechanical ventilators**.** The mean body temperature started with low rate in the first 20 minutes and then it changed in the other periods but within the normal range**.** The difference between the two groups is statistically significant was observed at the end of the 4^{th} 20- minute p=0.047.

Figure (2): Showed that the mean heart rate (b/m) of premature infants in both groups was within the normal range for the 2 hours after weaning from the mechanical ventilation **.**The mean heart rate started with high rate in the first 20-minutes and then it decreased in the other periods but within the normal range**.**

Figure (3): Showed that mean respiratory rate (C/m) of premature infants in the two groups. The mean respiratory rate of premature infants in the right lateral position was started with high rate in the first 20 minutes and still high in the other periods throughout 2 hours after weaning from the mechanical ventilators, but mean respiratory rate of premature infants in the control group was in the normal range throughout 2 hours after weaning from the mechanical ventilators**.** While both groups' RRs were close to each other in the fourth and fifth 20-minutes. At the end of the 1st, 2nd, 3rd, and 6th 20-minute periods, there were statistically significant differences between the two groups. P = 0.033, 0.002, 0.000, and 0.001, respectively.

Figure (4): This figure demonstrated that only 3.3% of premature infants in study group the right lateral position had complications such as breathing difficulty or apnea, compared to 33.3% and 30% of them in the control group, respectively.

Discussion

Proper positioning is crucial in management of neonates with respiratory distress syndrome. It significantly affects their health status, their ventilation and oxygenation of tissues. However, the most suitable position remains controversial **(Salih et al., 2020).**

The present study showed female that more than half of premature infants. This finding matched with those obtained by **Yin et al., 2016** who found that majority of the studied neonates on mechanical ventilation were female. The male gender and neonatal respiratory distress syndrome (NRDS) are positively associated was reported by **Zhao et al., 2017).** Enhancing effect of estrogens on alveolar growth and surfactant production can be used to explain the protective effect of female gender (**Seaborn et al., 2020**). As opposed to that, **Torabian et al., 2019)** reported that males most affected sex of respiratory distress among neonates and need mechanical ventilation as a management.

Regarding SaO_2 (%): the present study revealed that statistically significant differences were found between the two groups throughout the two hours with high rate of mean SaO_2 (%) among premature infants in the right lateral position than those in the control group at the end of first, third, fourth, fifth, and sixth 20-minute periods (P= 0.003, 0.000,0.000,0.001and 0.000) respectively. The researcher opinion might be explained in the light of that the higher diaphragm efficacy during their position was change contraction generates more strength and improves ventilation, which optimizes gas exchange optimal oxygenation in plays an important role in the neonatal period. **(Babaei et al., 2019)**. As necessary it is essential to maintain a proper oxygen saturation level based on gestational age. Moreover, the present results are not in harmony with the results of **Akbarian et al., 2016)** who assessed the effect of prone, supine, and lateral positions on SaO2 in low birth weight infants and observed better oxygenation in the prone position than in other positions. In addition, results obtained by **Brunherotti et al., 2018)** who reported that the lowest mean of oxygen saturation was observed in the lateral positions among preterm neonates in a study done in Brazil.

Furthermore, a study, was conducted by **Yin et al., 2016)** suggested that the mean SaO2 was not significantly different among the premature infants in three positions (i.e., supine, lateral, and semi-prone).

Regarding the comparison between premature infants in the two groups related to their mean± SD PH, PCO_2 (mmHg) and HCO_3 (mmol/L) during 2hours after weaning from the mechanical ventilators. The present study noted statistical significant difference between the two groups was found related to Mean ± SD PH in the first hour only p= 0.044, While no statistical significant differences were found between premature infants' PH in the second hour, and PCO_2 (mmHg) and HCO_3 (mmol/L) in the two groups throughout the 2 hours period after weaning from the mechanical ventilators either in the first or in the second hour. These results are supported by **Güler & Çalışır 2020)** who found there were no statistically significant differences in PH, PCO2 (mmHg), and HCO3 levels between the study and control groups (mmol/L). They concluded that there was no effect of positioning on the adaptation to spontaneous breathing in premature infants after weaning from mechanical ventilation**.** **Tarnow-Mordi et al., 2019** reported that normo-thermic as a result of developing metabolic acidosis, infants were able to achieve and maintain a pH that was close to normal by increasing carbon dioxide elimination.

As regarding body temperature (°C): results of the present study indicated that mean body temperature (◦C) of premature infants in the two groups was in the normal range throughout 2 hours after weaning from the mechanical ventilators**.** The mean body temperature was started with low rate in the first 20 minutes and then it changed in the other periods but within the normal range**.**

This result is in the line with those obtained by **Punthmatharith & Mora (2018)** who found that body temperature of the preterm infant is tightly controlled, with little variation in heat loss or gain and finely tuned to keep the body's temperature within the ideal range for development, metabolism, and survival. Control of body temperature can only be achieved over a narrow range of ambient conditions in the absence of external heat inputs and/or aids to preserve heat.

Regarding **heart rate (b/m)**

Results of the present study showed that mean heart rate (b/m) in the two groups of premature infants were in the normal range throughout 2 hours after weaning from the mechanical ventilators**.** The mean heart rate is started with high rate in the first 20 minutes and then it decreased in the other periods but within the normal range**.** This result is in agreement with those obtained by **Yin et al., 2016** who executed a study in Taiwan to compare two positions (i.e., supine and lateral) in preterm neonates under continuous positive airway pressure (CPAP), they found that the mean heart rate was not different between the studied positions.

Furthermore, the current study's findings is in disagreement with the results of another study accomplished in the United States by **Ma et al., 2015)** who evaluated the effect of different positions on cardiac output in preterm infants and found that decrease cardiac output and increase heart rate when placing the newborn in the prone position.

Regarding **respiratory rate (C/m):**

The current study showed that mean respiratory rate (C/m) of premature infants in the two groups, It began rapidly in the first 20 minutes in the right lateral position throughout 2 hours after weaning from the mechanical ventilators, but mean respiratory rate of premature infants in the control group was in the normal range throughout 2 hours after weaning from the mechanical ventilators, While the RRs of both groups were close to each other at the 4^{th} and 5^{th} 20 minute. There statistically significant differences between the two groups were found at the end of 1^{st}, 2^{nd}, 3^{rd}, and 6^{th} minute. P= 0.033, 0.002, 0.000, and 0,001 respectively.

Brunherotti **et al., 2018** stated that other studies explored the effect of the position of a premature infant on the RR, symptoms of respiratory distress and the existence of apnea reached different conclusions. In which the effect of positioning premature infants on MV on the success of weaning from MV was examined in this study, no difference was observed between the supine, right lateral and prone positions in terms of the infant's RRs **(Antunes et al., 2003**,)

Related to complications occurred after weaning from the mechanical ventilators. The present study demonstrated that only less than four percent of premature infants in the right lateral position had complications as breathing difficulty or apnea compared to about one third of them in the control group had breathing difficulty and apnea respectively.

This result might be related to that the lateral position may affect preterm neonates' respiratory mechanisms, leading to changes in gas exchange due to the decreased pressure of abdominal organs on diaphragm letting it moves freely.

Finding of the present study is in agreement with those obtained by **Babaei et al, 2019** study who reported that the lateral position increases the tidal volume and the functional residual capacity, resulting in stabilization of the chest wall with more synchrony between thorax and abdomen.

Moreover this finding is also supported by **Fiorenzanom et al., 2019** who reported that the diaphragm operates as when preterm infants breathe, the primary muscle is the respiratory muscles generate more strength in the lateral position. This result can be attributed to the fact that neonate with respiratory complications when placed in lateral position, their respiratory and heart rates reduced, so their tachypnea and tachycardia improved and they became more stable and calm. In addition, result of the current study is congruent with a study performed by **Sharma et al., 2018**, who reported that the lateral position is best for preterm neonates and resulted in improved oxygenation and more organized sleep-rest patterns. In this study, there was an improvement in mean cardiorespiratory outcome and respiratory distress signs in lateral position. This finding also is congruent with **Akbarian et al., 2016,** who concluded that the lateral position leads to an improvement in respiratory rate, heart rate, and oxygen saturation, among preterm neonates with respiratory distress, without any complications such as apnea or vomiting as compared to other positions.

Conclusions:

The present study concluded that premature infants placed on the right lateral position had higher SaO_2 (%) and lower complications as breathing difficulty and /or apnea than those in the control group during the first 2 hours after weaning from the mechanical ventilation with statistically significant differences. Statistical significant difference was found between the two groups related to mean ± SD PH in the first hour. At the end of the fourth 20-minute period, a statistically significant difference in body temperature was observed between the two groups. And in relation to respiratory rates at the end of the first, second, third, and sixth minutes, there were statistically significant differences between the two groups. Right lateral position had no effect premature infants PCO_2 (mmHg) and HCO_3 (mmol/L) as well as their heart rate.

Recommendations:

Right lateral position should be used in the routine pediatric care of infants weaning from mechanical ventilation as it safe, simple and non-invasive method that can help in improving oxygenation of preterm infants.

Further researches should be carried out on a large sample to identify effect of other positions on premature infants on their blood oxygenation during weaning of mechanical ventilation with increasing of the period of observation more than 2 hours.

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