Journal of Intensive and Critical Care
ISSN:2471-8505

Open access Short Communication

Electrical Impedance Tomography was used to Identify the Patient's Ventilator Asynchrony

Brian Mahoney*

Department of Emergency Medicine, Beykent University, Turkey

INTRODUCTION

In the realm of modern medicine, few inventions have had as profound an impact on patient care as ventilators. These mechanical marvels play a crucial role in supporting individuals with respiratory failure, providing vital assistance in breathing when their own respiratory system is unable to function adequately. From intensive care units to emergency rooms, ventilators have become indispensable tools in the hands of healthcare professionals, helping to sustain life in the most critical of circumstances. At its core, a ventilator is a complex medical device designed to assist or replace spontaneous breathing. It delivers oxygen to the lungs and removes carbon dioxide from the body, mimicking the natural respiratory process. Ventilators come in various forms, ranging from simple machines used for short-term support to sophisticated models equipped with advanced features for long-term care. This connects the ventilator to the patient and facilitates the delivery of gases. It consists of tubing, valves, and connectors. Ventilators feature controls that allow healthcare providers to adjust parameters such as tidal volume, respiratory rate, and inspiratory and expiratory pressures according to the patient's needs [1,2]. Ventilators are equipped with monitoring systems to track parameters such as oxygen saturation, end-tidal carbon dioxide, and airway pressure, providing crucial feedback to clinicians.

DESCRIPTION

Alarms alert clinicians to deviations from pre-set parameters or equipment malfunctions, ensuring prompt intervention in case of emergencies. Ventilators offer various modes of ventilation to accommodate diverse patient conditions and treatment goals. Delivers a set tidal volume at a predetermined respiratory rate, with the option for the patient to trigger additional breaths. Augments spontaneous breathing efforts by delivering a pre-set pressure during inspiration. Maintains a constant positive pressure throughout the respiratory cycle, primarily used to support patients with respiratory distress. Ventilators provide life-sustaining support for patients experiencing acute respiratory failure due to conditions such as pneumonia, Acute Respiratory Distress Syndrome (ARDS), or exacerbations of Chronic Obstructive Pulmonary Disease (COPD). During surgical procedures, ventilators assist in maintaining adequate oxygenation and ventilation while the patient is under anaesthesia. Patients with neuromuscular conditions such as Amyotrophic Lateral Sclerosis (ALS) or Guillain-Barre syndrome may require ventilator support to compensate for muscle weakness affecting respiratory function. Ventilators are essential in Neonatal Intensive Care Units (NICUs) for supporting premature infants with underdeveloped lungs or respiratory distress syndrome. Prolonged mechanical ventilation can increase the risk of complications such as ventilator-associated pneumonia, barotrauma, and ventilator-induced lung injury [3,4]. Achieving synchrony between the patient's respiratory efforts and the ventilator's support is crucial for optimal outcomes, requiring careful adjustment of ventilator settings and patient monitoring.

CONCLUSION

During times of crisis or surge in demand, such as the COVID-19 pandemic, ensuring equitable access to ventilators poses ethical dilemmas and necessitates strategic resource allocation. Advancements in technology and medical science continue to drive innovation in ventilator design and functionality. Future developments may focus on enhancing patient comfort, improving algorithms for ventilator management, and integrating artificial intelligence to optimize treatment strategies. Ventilators represent a cornerstone

Received:	01-April-2024	**Manuscript No:**	IPJICC-24-19704
Editor assigned:	03-April-2024	**PreQC No:**	IPJICC-24-19704 (PQ)
Reviewed:	17-April-2024	**QC No:**	IPJICC-24-19704
Revised:	22-April-2024	**Manuscript No:**	IPJICC-24-19704 (R)
Published:	29-April-2024	**DOI:**	10.35248/2471-8505-10.2.12

Corresponding author Brian Mahoney, Department of Emergency Medicine, Beykent University, Turkey, E-mail: brian_mahoney@gmail.com

Citation Mahoney B (2024) Electrical Impedance Tomography was used to Identify the Patient's Ventilator Asynchrony. J Intensive Crit Care. 10:12.

of modern critical care, offering a lifeline to patients facing respiratory failure. With their ability to provide precise and tailored respiratory support, ventilators empower healthcare professionals to save lives and improve outcomes in the most challenging clinical scenarios.

ACKNOWLEDGEMENT

None.

CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

REFERENCES

1. Cavallaro F, Sandroni C, Antonelli M (2008) Functional hemodynamic monitoring and dynamic indices of fluid responsiveness. Minerva Anestesiol. 74(4):123-135.
2. Barbier C, Loubieres Y, Schmit C, Hayon J, Ricome JL, et al. (2004) Respiratory changes in inferior vena cava diameter are helpful in predicting fluid responsiveness in ventilated septic patients. Intensive Care Med. 30(9):1740-1746.
3. Stoltze AJ, Wong TS, Harland KK, Ahmed A, Fuller BM, et al. (2015) Prehospital tidal volume influences hospital tidal volume: A cohort study. J Crit Care. 30(3):495-501.
4. Singh JM, Ferguson ND, MacDonald RD, Stewart TE, Schull MJ (2009) Ventilation practices and critical events during transport of ventilated patients outside of hospital: A retrospective cohort study. Prehosp Emerg Care. 13(3):316-323.