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Letter to Editor

Nursing Ultrasound Applications Against COVID-19 Patients in Emergency Departments

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The COVID-19 pandemic has led all to important changes in clinical practice, having to reorganize many
protocols and procedures to deal with patients in, sometimes, disadvantageous situations, such as when it is necessary to wear heavy and uncomfortable personal protective equipment (PPE)
In late 2019, new coronavirus pneumonia (coronavirus disease 2019, COVID-19) flared up in Wuhan, China. Immediately after the world
The World Health Organization (WHO) has characterized COVID-19 as a pandemic
(Hansson M, et al., 2020, Pattison N., 2020). COVID-19 brings big morbidity and mortality and aspects of excessive workload rigorous use of PPE , invisible clinical needs and comfort patients and family in difficult situations make this disease a huge challenge. (Huang C et al., 2020, Lucchini A, et al., 2020). the use of nursing ultrasound in emergency departments offers nurses the opportunity to improve care
perform some procedures with greater ease and safety. These include peripherals venous and arterial punctures, pulmonary evaluation,(K.Wolde Sellasie , et al.2021) positioning of a gastric tube, evaluation of the inferior vena cava and bladder volume and skin protection.

Implications of clinical practice

This manuscript describes in 6 points, the practical implications of nursing ultrasound in emergencydepartments

A. Ultrasound-guided vascular catheterization can greatly improve success by reducing implantation speed,avoiding multiple venipunctures, reducing the incidence rate of complications, improving the clinical level, increasing asepsis maneuvers and providing a strong guarantee for catheterization. hard. The use of nursing ultrasound in the field of venous access involves numerous
benefits and must be promoted in case of severe COVID-19 in patients with difficulty in finding venousaccess

B. Chest and abdomen radiography is the preferred examination to verify correct positioning, but it is also a method that exposes the patient to radiation with an important increase in economic and organizational costs,fundamental aspects during the covid 19 pandemic
The position of the gastric tube by ultrasound can avoid and reduce the onset of complications of enteralnutrition and effectively reduce the harm to severe COVID-19 patients.

C. Ultrasound monitoring of residual gastric volume can accurately assess the gastric emptying function of patients with severe COVID-19, which has certain which means guide for patients to accept enteral nutritionand reduces the risk of occupational exposure of nurses, and allows for better non-invasive ventilation

D. Pulmonary ultrasound can quickly determine the cause of hypoxia in severe conditions COVID-19 patients and carefully guide the respiratory management of severe COVID-19 patients.Pulmonary ultrasound, as widely demonstrated, is of great help for the correct evaluation of the ventilation modality, andof the correct prioritization of triage.

E. Pelvic nursing ultrasound is a non-evaluation method invasive of the volume of the bladder, its contents, the intravesical salience of the prostatic-trigonal resion and the real-time determination of the positioning of the catheter bladder. It does not have diagnostic purposes, but to support operational procedures and has beenfundamental in the assistance of patients suffering from severe covid 19

F. Nursing Ultrasound of the inferior vena cava was found to be fundamental in the nursing care of thepatient affected by covid -19 to evaluate the status of the circulating volume The application of ultrasound can make nursing care more accurate and objective in clinical work and discover changes in patients with severe COVID-19 'by reducing time and acting preventively with targetedassistance interventions

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1 A: Ultrasound-guided Venous/Arterial Access

low success rates of peripheral and arterial veins during puncture with PPE (disposable cap, protective gogglesand / or protective visor, protective surgical mask, FFP2 / FFP3 mask, disposable clothing, two disposable latex gloves, disposable shoe covers, disinfectant), the protective goggles can easily form fog, thus hindering the smoothinsertion of the catheter. The ultrasound-guided puncture provides greaterpossibility of success in catheter placement (Jahns F P et al., 2019), especially in urgency (Gilardi E etal 2019). Working with the double glove reduces the operator's sensitivity in arterial puncture, fundamental in hemodynamic and respiratory monitoring in emergency departments, Ultrasound-guided catheterization was found to be essential to reduce the cost and complications of puncture.

2 B: Ultrasound guided positioning of the nasogastric tube

Difficulty in positioning a gastric tube Nasogastric tube placement is the simplest and most common methodused to provide short-term enteral nutrition. Nasogastric tube placement could cause coughing in patients, resulting in a risk of perfusion droplets and easily causing occupational exposure. (Walldorf J et al., 2020). Also, with covid 19 PPE the ears are wrapped in protective clothing and the gurgling sound cannot beheard on auscultation. If the gastric contents can not being aspirated through the gastric tube, it is very difficult to correctly assess gastric tube placement (Andresen E N et al., 2016). Proper Control it is absolutely necessary to position the tube before starting enteral feeding to avoid complications such as aspiration pneumonia (Taylor SJ et al., 2019).

If a double trace mark was observed when scanning the long axis of the esophagus with ultrasound then it isbelieved that a nasogastric tube has entered the esophagus. Meanwhile, if a double trace sign is observed in the gastric body, therefore it can be judged as being placed in the stomach. Furthermore, through the water injection test, one can judge whether or not there is a "Fogging" effect.

3 E: Nursing pelvic ultrasound and ultrasound-guided bladder catheter placement

Nursing pelvic ultrasound is a method for assessing the volume of the bladder, it is of fundamental importance for the assessment and adequate haemodynamic management of the patient in the emergency departments this type of ultrasound was also very useful for facilitating the aseptic insertion of the bladdercatheter while maintaining correct use of PPE

4 C: Gastric residual ultrasound monitoring

Monitoring of residual gastric volume with the conventional method presents risks Residual gastric volume should be monitored for severe COVID-19n patients at high risk of aspiration every 4 hours, but taking the gastric residue with a syringe presents the risk of splashing of gastric contents. There is good correlation between “gastric antrum area measured by gastric ultrasound single section antral method "and" volume of gastric contents "(Schmitz A et al., 2012). The use of ultrasound to measure the area of the gastric antrum toevaluate the residual gastric volume substantially reduces a nurse's risk occupational exposure.

5 D: Thoracic Nursing Ultrasound

Difficulty assessing pulmonary efficacyv Pulmonary ultrasound facilitates the determination of the durationand frequency of the prone position Dynamically monitor the progression of the disease and evaluate it efficacy of ongoing therapy based on the increase and decrease of B.lines, areas of line B and consolidation area and volume with the use of predefined protocols such as the BLUE protocol. (K. Wolde Sellasie et al 2021)

6 F: Nursing ultrasound of the vena cava

Ultrasound of the inferior vena cava is fundamental in the urgent evaluation of any state of shock, for a correct care classification by the nursing staff, numerous studies in the literature show how a correct ultrasound examination can facilitate the care pathway in emergency departments, especially in patients with severe covid 19

Nursing ultrasound

Difficulty detecting emergency events early in COVID-19 patients The condition of patients with severe COVID-19 can change rapidly When patients' vital signs change, ultrasound can be used to quickly rule out the underlying cause. For example, if a patient has dyspnea and a reduced oxygen saturation in the blood, the nurse can quickly judge the cause through lung ultrasound, facilitating the correct path of care and above all by identifying early complications.

In summary, through visual qualitative and quantitative assessments (Table 1), critical nursing ultrasound supports a goal-oriented care strategy that may be useful in caring for severe COVID-19 patients. In addition, the use of ultrasound allows you to perform nursing care with a more advanced level of safety for the healthcare professional and for the patient.

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