15 - INCIDENCE OF ACUTE RESPIRATORY DISTRESS SYNDROME IN INTENSIVE CARE UNIT IN THE THREE-MONTH PERIOD: A RETROSPECTIVE STUDY

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INTRODUCTION

The acute respiratory distress syndrome (ARDS) was first described in 1967 in patients who presented tachypnea with hypoxemia refractory to the administration of supplemental oxygen, decreased lung compliance and diffuse pulmonary infiltrates on chest radiograph (ANTONIAZZI et al. 1998 ; OLIVEIRA & BASILLE, 2006). It was later described as a non-cardiogenic pulmonary edema, which increases the permeability of the alveolar-capillary membrane (ANTONIAZZI et al., 1998). In 1988, Murray et al proposed a scale for the level of lung injury, which is based on four criteria (chest radiography, PaO2/FiO2, static lung compliance, and positive end-expiration pressure- PEEP), on a scale ranging from 0 to 4 (ANTONIAZZI et al. 1998).

Currently, ARDS is classified according to the pressure of pulmonary artery occlusion, the chest X-ray analysis (presence of bilateral infiltrates) and the oxygenation index (Pa O2/FiO2 ≤ 300 for acute lung injury - ALI and ≤ 200 for ARDS) (COIMBRA & SILVERIO, 2001; OLIVEIRA & BASILLE, 2006).

The American European Consensus (1994), defines two ways for the pathogenicity of ARDS: a direct (pulmonary) that directly affects lung parenchyma, and an indirect (extrapulmonary), where the injury results from an acute systemic inflammatory response.

In direct injury to the lung epithelium is the first structure to be affected. The epithelial damage leads to a flooding of the alveoli, reducing the removal of edema from the alveolar space, decrease in surfactant replacement and fibrosis. In the case of extrapulmonary ARDS, injury is indirect and lung lesions are caused by mediators released in the blood of an extrapulmonary focus (sepsis, peritonitis, pancreatitis), in this case, the main target for the lesions are pulmonary endothelial cells (ROCCO and PELOSI, 2008).

The ARDS is acute onset and duration can vary from days to weeks. It is divided into three phases, the first being the exudative where there is increased capillary permeability, edema and hemorrhage, lasting from 3 to 5 days, the second phase is the fibroproliferative phase, lasts 1 to 2 weeks, and is characterized by increase in dead space, worsening hypoxemia, intense cellular infiltration and disruption of lung architecture, the third and final phase is fibrotic, whose injury has become chronic and irreversible (ANTONIAZZI et al. 1998; COIMBRA & SILVERIO, 2001)

The main risk factors for the development of ARDS are pneumonia, aspiration of gastric contents, sepsis, pulmonary contusion and multiple trauma, multiple transfusions, pancreatitis and diffuse lung infection (ANTONIAZZI et al. 1998; COIMBRA & SILVERIO, OLIVEIRA & BASILLE, 2006).

Many studies have been published on the management of ARDS, and what is currently recommended is the protective ventilation strategy, which advocates the use of low tidal volumes (4-8 ml / kg), permissive hypercapnia (PaCO2 values of up to 80 - 100 mmHg) and ventilation in the prone position.

The aim of this study was to determine the incidence of ARDS within 3 months.

METHODS

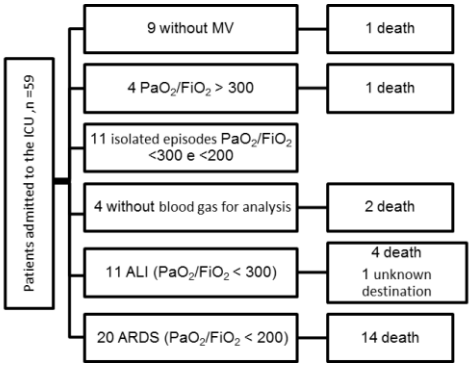
We analyzed all patients admitted to the ICU HUOP the period from March to May, 2009, through the control of respiratory physiotherapy service. The initial selection was made based on PaO2/FiO2 ratio and thus the criteria analyzed in more patients with ARDS.

Data collected from these patients were age, sex, days of mechanical ventilation, cause of admission, type of ARDS (pulmonary or extrapulmonary) the static compliance (CEST) and PaO2/FiO2 on the diagnosis of ARDS, most positive end-expiratory pressure (PEEP) used scores of lung injury, where an alveolar recruitment maneuver (RM) and are answered, the use of prone positioning and the fate of these patients.

RESULTS

Of the 59 patients admitted to the ICU, 11 (18.6%) had ALI and 20 (33.8%) had oxygenation index <200, and then included in the critical analysis of ventilatory control. The results are shown as mean ± standard deviation. Figure 1 shows the primary analysis of patients

Figure 1: Number of patients analyzed in the study, admitted in March, April and May 2009



Twenty patients with ARDS were then analyzed. The average age was 58 ± 16.3, 75% were male, the two leading causes of admission were: sepsis (25%) and pneumonia (15%) 70% of patients had extrapulmonary ARDS. Table 1 shows patient data.

The average days of MV was 10 ± 6.4, the highest PEEP used was 10 ± 3.9; Pplat to the basket and Pa O2/Fi O2 the day of diagnosis of ARDS were 25.8 ± 6.1 cmH2O ; mL/cmH2O 27 ± 7.6 and 129.7 ± 39.3 mmHg respectively. Seven patients received recruitment maneuver, and responders were half the time they received the maneuver. Two patients were pronated, one was pronated twice for a total of 25 hours, both had severe lung injury and died. The mortality rate of all patients with ARDS was 70%, and the ICU (counting the 59 patients admitted during the period) was 37.9%.

The mean lung injury score of the 20 patients was 2.5 ± 0.5. Patients with ARDS who had a score> 2.5 (serious injury) had a mortality rate of 25%. According to this score, 60% had mild to moderate injuries and 40% injury.

The criterion used in this work to define ARDS was only the oxygenation index, with values below 200, for more than 24 hours, the chest radiographs were not available for analysis.

Table 1 - Characteristics of study patients

Age, yr	Sex, M/F	Admission Cause	Cause of ARDS	Days on MV	PaO2/FiO2	Higher PEEP
69	M	Brain tumor	P	18	106	9
55	M	Acute myocardial infarction	E	11	95	12
70	M	traumatic brain injuty	E	24	186	9
71	F	acute renal failure	E	8	140	10
39	M	acute renal failure	E	2	57	16
31	M	traumatic brain injuty	E	12	160	7
42	M	PNM	P	5	82	10
82	F	acute respiratory failure	E	19	155	13
68	M	Pancreaticoduodenectomy	E	15	126	10
38	M	Cirrhosis of the liver	E	2	111	8
75	M	sepsis	E	3	71	9
47	M	pneumocytis pnm	P	5	155	8
42	M	knife perforation	P	11	108	16
65	M	sepsis	P	13	156	17
60	F	morbid obesity	E	16	175	8
83	F	sepsis	E	5	158	5
68	M	sepsis	E	6	177	7
45	M	cardiogenic shock	E	1	95	9
39	F	Brain tumor	E	9	147	10
72	M	PNM	P	14	87	20

M - male, F - female, E - extrapulmonary, P - pulmonary

DISCUSSION

Mechanical ventilation (MV) is a supportive therapy for patients with acute lung injury (ALI) and / or ARDS, however, despite advances in intensive care, the mortality rate in these patients is greater than 40% (PIACENTINI et al. , 2004).

The high mortality rate among patients with ARDS in the ICU is higher than described in the literature, which is around 50% (SILVERIO & Coimbra, 2001). The rate in the ICU described in the literature varies from 24 to 47%, going according to findings in this study (MORAES et al., 2005).

In 2000, The Acute Respiratory Distress Syndrome Network (ARDSnet) developed a study in patients with ALI and ARDS. The objective was to compare the use of conventional ventilation (Vt = 12ml/kg and Pplat 50cmH2O ≤) with protective ventilation (Vt = 6ml/kg Pplat and ≤ 30 cmH2O). Mortality was drastically reduced in the group with protective ventilation, and reduce the number of days on mechanical ventilation, compared with the group treated with conventional MV. Since then, the consensus was that you must ventilate patients with ALI / ARDS with low Vt.

Despite the impact of "harmful" in the MV, some of your settings such as PEEP are needed to increase the portion of the non-aerated lung, resulting in increased oxygenation. They are commonly used values from 5 to 12 cmH2O (GIRARD AND BERNARD, 2007).

PEEP improves hypoxemia and decreases the pulmonary shunt, while minimizing the potential for lung injury associated with the use of toxic concentrations of inspired oxygen and prevents lung collapse at end-expiration (GIRARD AND BERNARD, 2007). PEEP in the present study is consistent with that found in the literature, mean 10 ± 3.9.

In the III Brazilian Consensus on mechanical ventilation, 2007, stressed the importance of using low Vt (Vt ≤ 6 ml / kg predicted body weight) and ≤ 30 cmH2O Pplat as protective ventilation strategy. Rationally, the Vt should be adjusted according to Pplat (<30 cmH2O), ie, lower Vt.

The Pplat was found satisfactory, because studies recommend that this pressure should be less than 30 cmH2O (SILVERIO Coimbra, 2001). Static compliance <30 indicates mL/cmH2O lung injury, and in this study, we found an average of 27 Cest mL/cmH2O.

CONCLUSION

The main causes of admission (risk factors) found in this study were sepsis, pneumonia, and TBI, factors cited in work-related ARDS (ANTONIAZZI et al, 1998; COIMBRA & SILVERIO, 2001; OLIVEIRA & BASILLE, 2006).

KEY WORDS: respiration, artificial; respiratory insufficiency, intensive care unit

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INCIDENCE OF ACUTE RESPIRATORY DISTRESS SYNDROME IN INTENSIVE CARE UNIT IN THE THREE-MONTH PERIOD: A RETROSPECTIVE STUDY

Objetives: To identify the occurrence of acute respiratory distress syndrome (ARDS) in the intensive care unit (ICU). Methods: A retrospective study was performed based on control of respiratory physiotherapy service in the ICU of the University Hospital of the West of Paraná (HUOP). The study period was from March to May 2009. The data collected were: sex, age, cause of admission, duration of mechanical ventilation, type of ARDS (pulmonary or extrapulmonary), the oxygenation index (PaO2/FiO2), the static compliance (CEST), the plateau pressure (Pplat), the response to recruitment maneuver (RM), the prone position, and ultimately, the fate of patients. RESULTS: Of 59 patients admitted in the period, 11 patients had ALI and 20 ARDS. The ICU mortality rate in this period was 38%, and among patients who had ARDS, this rate rose to 70%. The mean (± standard deviation) of PaO2/FiO2 in patients with ARDS was 129.7 (± 39.3). The extrapulmonary ARDS was found in 70% of cases. Conclusion: The incidence of ALI and ARDS in this period was 18.6 and 33.8%, respectively. The main risk factors were sepsis and pneumonia. The mortality rate in patients with ARDS was high.

KEY WORDS: respiration, artificial; respiratory insufficiency, intensive care unit

INCIDENCE DES SYNDROME RESPIRATOIRE AIGU SEVERE EN REANIMATION DANS LA PÉRIODE DE TROIS MOIS: UNE ETUDE RÉTROSPECTIVE

Objectifs: identifier l'apparition d'un syndrome de détresse respiratoire aiguë (SDRA) dans l'unité de soins intensifs (USI). Méthodes: Une étude rétrospective a été réalisée basé sur le contrôle des services de kinésithérapie respiratoire aux soins intensifs de l'hôpital universitaire de l'Ouest du Paraná (HUOP). La période d'étude a été de Mars à Mai 2009. Les données recueillies étaient: sexe, âge, cause de l'admission, durée de ventilation mécanique, le type de SDRA (pulmonaire ou extrapulmonaire), l'index d'oxygénation (PaO2/FiO2), la compliance statique (CEST), la pression de plateau (Pplat), la réponse de manœuvre de recrutement (ARM), la position couchée et, finalement, le sort des patients. RÉSULTATS: Parmi les 59 patients admis dans la période, 11 patients avaient un SDRA ALI et 20. Le taux de mortalité aux soins intensifs dans cette période était de 38%, et chez les patients qui avaient un SDRA, ce taux est passé à 70%. La moyenne (± écart type) de PaO2/FiO2 chez les patients présentant un SDRA était 129,7 (± 39,3). Le SDRA extrapulmonaire a été trouvé dans 70% des cas. Conclusion: L'incidence de l'ALI et SDRA dans cette période était de 18,6 et de 33,8%, respectivement. Les principaux facteurs de risque étaient la septicémie et la pneumonie. Le taux de mortalité chez les patients présentant un SDRA a été élevé.

MOTS CLÉS: la respiration, artificielle; insuffisance respiratoire, unité de soins intensifs

INCIDENCIA DEL SÍNDROME DE DISTRÉS RESPIRATORIO AGUDO EN LA UNIDAD DE CUIDADOS INTENSIVOS EN EL PERIODO DE TRES MESES: ESTUDIO RETROSPECTIVO

Objetivos:Identificar la aparición del síndrome de distrés respiratorio agudo (SDRA) en la unidad de cuidados intensivos (UCI). Métodos: Estudio retrospectivo basado en el control del servicio de fisioterapia respiratoria en la UCI del Hospital de la Universidad del Oeste de Paraná (HUOP). El período de estudio fue de marzo a mayo de 2009. Los datos recogidos fueron: sexo, edad, causa de ingreso, duración de la ventilación mecánica, el tipo de SDRA (pulmonar o extrapulmonar), el índice de oxigenación (PaO2/FiO2), la distensibilidad estática (CEST), la presión meseta (Pplat), la respuesta a la maniobra de reclutamiento (ARM), la posición boca abajo, y en última instancia, el destino de los pacientes. Resultados: De los 59 pacientes ingresados en el período, 11 pacientes tenían SDRA ALI y 20. La tasa de mortalidad en la UCI en este período fue del 38%, y entre los pacientes que tenían SDRA, esta tasa se elevó a 70%. La media (± desviación estándar) de la PaO2/FiO2 en los pacientes con SDRA fue 129,7 (± 39,3). El SDRA extrapulmonar se encontró en el 70% de los casos. Conclusión: La incidencia de la LPA y el SDRA en este período fue de 18,6 y 33,8%, respectivamente. Los principales factores de riesgo fueron la sepsis y la neumonía. La tasa de mortalidad en pacientes con SDRA es alta.

PALABRAS CLAVE: la ventilación, unidad de cuidados intensivos, insuficiência respiratoria

INCIDÊNCIA DE SÍNDROME DA ANGÚSTIA RESPIRATÓRIA AGUDA NA UNIDADE DE TERAPIA INTENSIVA NO PERÍODO DE TRÊS MESES: UM ESTUDO RETROSPECTIVO

Objetivos: Identificar a ocorrência da Síndrome do Desconforto Respiratório Agudo (SDRA) na unidade de tratamento intensivo (UTI). Métodos: Estudo retrospectivo realizado com base no controle ventilatório do serviço de fisioterapia na UTI do Hospital Universitário do Oeste do Paraná (HUOP). O período analisado foi de março a maio de 2009. Os dados coletados foram: sexo, idade, causa de admissão, tempo de ventilação mecânica, tipo de SDRA (extrapulmonar ou pulmonar), o índice de oxigenação (relação PaO2/FiO2), a complacência estática (CEst), a pressão de platô (Pplatô), a resposta à manobra de recrutamento alveolar (MRA), a posição prona, e, por fim, o destino dos pacientes. Resultados: dos 59 pacientes admitidos no

período, 11 pacientes apresentaram LPA e 20 apresentaram SARA. A taxa de mortalidade na UTI nesse período foi de 38%, e, entre os pacientes que tiveram SDRA, essa taxa subiu para 70%. A média (± desvio-padrão) da relação PaO2/FiO2 nos pacientes que apresentaram SDRA foi de 129,7 (±39,3). A SDRA extrapulmonar foi encontrada em 70% dos casos. Conclusão: a ocorrência de LPA e SARA nesse período foi de 18,6 e 33,8%, respectivamente. Os principais fatores de risco foram sepse e pneumonia. A taxa de mortalidade nos pacientes com SDRA foi bastante elevada.

PALAVRAS CHAVES: respiração artificial, insuficiência respiratória, unidade de terapia intensiva