240. Multidisciplinary critical care

P2003
Effectiveness of touchscreen device (iPad) as communication tool for intubated patients admitted at the University of Santo Tomas Hospital
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Objectives: To improve the communication between intubated patients and health-care providers using iPad. Specifically, (a) we would like to determine the level of frustration of intubated patients in the ICU while using touchscreen device (iPad) as a communication tool (b) determine the helpfulness of touchscreen device (iPad) as a communication tool between intubated patients in the ward/ICU and health care providers.

Subjects: (1) more than 18 years old, (2) able to read, speak and understand either English or Filipino, (3) oriented to person, place, time and situation at the time of interview, (4) Glasgow Coma Score 11 (Eyes 4, Verbal 1, Motor 6), (5) competent and able to sign an informed consent form; hemodynamically stable and (6) required intubation for at least 18 hours.

Design: A pilot observational descriptive study design.

Results: Patients level of frustration while intubated, eighty-eight percent (88.46%) of the sample reported extreme levels of frustration when communicating with other people while intubated. Seven percent (7.69%) reported their experience as very frustrating. Almost four percent (3.85%) reported their experience to be somewhat helpful, fifteen percent (15.38%) reported their experience to be helpful, almost four percent (3.85%) reported their experience to be most helpful, and seventy-six percent (76.92%) reported their experience to be extremely helpful when iPad was used as a communication tool.

P2004
The usefulness of high resolution computed tomography in burned patients with inhalation injury
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Background: Smoke inhalation may affect both airway and lung parenchyma. Then, airway injury can be easily assessed by bronchoscopy, but lung parenchymal injury might be evaluated by other imaging modalities. The aim of this study is to assess lung parenchymal injury by high resolution computed tomography (HRCT) in burned patients who had been identified inhalation injury bronchoscopically.

Methods: The bronchoscopy with biopsy at carina or 2nd carina and HRCT were performed in burned patients with inhalation injury initially after admission. Positive HRCT findings include peribronchial ground glass appearance with/or without consolidation, bronchial wall thickening, branching linear attenuation, atelectasis, interlobular septal thickening and bronchiectasis. We analyzed APACHE II scores, PF ratio, the need for mechanical ventilation care, pneumonia and degrees of airway injury according to HRCT findings.

Results: 22 burned patients were enrolled. Bronchoscopy was performed in all and HRCT in 19. Of those, 10 patents (52.6%) showed positive HRCT findings. Between positive and negative HRCT, age, burn size and initial COHb were not significant different (43±17.3 vs. 37±13.8, p > 0.05; 14.9±21.76% vs. 0.56±0.73%, p > 0.05; 6.2±7.68% vs. 11.5±6.64%, p > 0.05). Positive HRCT
findings were closely associated with more frequencies of mechanical ventilation care and pneumonia, and higher APACHE II scores and PF ratio, and more severe airway injury.

Conclusions: HRCT in burned patients with inhalation injury may be useful to assess lung parenchymal injury and to guide further therapy because radiographic evidence for lung parenchymal injury may predict the severity of inhalation injury.

P2005 Clinical analysis of patients treated with mechanical ventilation in an emergency respiratory ward
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Aims: To make analysis of indications, duration, complications and outcome of the mechanical ventilation in patients treated in the Emergency Respiratory Ward

Data and methods: A retrospective analysis of the patients in the Emergency Respiratory Ward treated with mechanical ventilation during the last 5 years (2007-2011). 1,919 patients (10.33%) from the total number of patients (1848) needed mechanical ventilation.

Results: The percentage of patients, treated with mechanical ventilation, does not differ substantially during the studied years – from 10,81% in 2007 to 11,68% in 2011.

The most common reason for heavy respiratory insufficiency, demanding mechanical ventilation, is pulmonary pathology (81,67%) as the greatest percentage belonged to patients with acute pneumonia (75,31%) and its complications (7,2%) – 134 patients (85,90%). The most common reasons from the non-pulmonary pathology are aseptic hypoventilation in case of extreme obesity, chest deformations, left-side cardiac insufficiency.

The usual duration of mechanical ventilation is 15 days as there are no significant differences in the studied years – from 77,14% to 87,10%.

7 of the patients (3,66%) have a verified diagnosis ventilator-associated pneumonia. The usual duration of mechanical ventilation is 15 days. The total number of patients with lethal outcome is 66 (34,50%) as there are no significant differences in the studied years.

Conclusion: About 10% of the patients, treated in Emergency Respiratory Ward, need mechanical ventilation as the most common pulmonary pathology is COPD. The most common reasons from the non-pulmonary pathology are aseptic hypoventilation in case of extreme obesity, chest deformations, left-side cardiac insufficiency.

P2009 Usefulness of noninvasive ventilation in patients with acute respiratory failure indicated in the intensive care unit (ICU) – Experience of a Portuguese ICU
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Introduction: Noninvasive ventilation(NIV) is a safe and effective mean of improving gas exchange in patients with many types of acute respiratory failure(ARF). Study design and patient selection: Retrospective observational study to access the usefulness of NIV in patients with ARF submitted to mechanical invasive ventilation(MIV) admitted to the ICU(Santa Luzia Hospital Viana do Castelo, Portugal). We enrolled adults with ARF admitted to the ICU in 2011. Patients were analyzed globally and in two subgroups: patients that received MIV and NIV and patients that received only MIV, recording various parameters, namely, comorbidities, diagnosis, SAPS II, APACHE II, presence of hypercapnia, pH, pCO2, MIV duration, number of days in the ICU and release condition. The two groups were compared by the Chi-square and Mann-Whitney tests.

Results: 104 patients were included, mainly admitted for pneumonia (52%), other causes of ARF (23%) and COPD exacerbation/hypercapnic acidemia (13%). 28 (27.0%) received MIV and 76 (73.0%) only MIV. When analyzed the differences between groups, was found statistical significant differences regarding the diagnosis (p<0.002), presence of hypercapnia (p<0.005), MIV time (p<0.015) and number days in the ICU (p<0.001), but no differences when compared co-morbidities, SAPS II, APACHE II, nutritional status, social dependence or release condition. NIV was used in patients with HA (36%) and difficult weaning (63%).

Conclusion: NIV was effective in reducing the MIV time and number of days in the ICU probably because, an selected patients, it reduces the risk of ventilative associated pneumonia,however no significant difference in mortality was observed.
P2010 Factors associated with the requirement of ventilatory support during an acute exacerbation of COPD
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Background: The duration of nebulization was not statistical different between the T piece and the Combihaler (42.0±9.9min vs 43.2±0.9min, p>0.05). The mass of amikacin deposited on the filter was twice higher with the Combihaler chamber compared with the Aerogen T-adapter (305.6±9.9 mg vs 142.4±4.9 mg, p<0.001) corresponding of an increasing of a factor 2 in term of output rate with Combihaler (7.1±4.2 mg/min vs 3.4±4.0 mg/min; p<0.001). The mass of sulfatometol deposited on the filter was 2.3 fold higher with Combihaler chamber in comparison with the connecter (43.5±6.3 μg vs 18.8±4.1 μg, p<0.05).

Conclusions: In comparison with T piece or connector, the use of the Combihaler spacer allows increasing the amount of drug delivery by a factor 2 either from nebulizer or pMDI during mechanical ventilation.

P2013 Predictors of 1-year mortality at hospital admission for acute exacerbations of COPD – a real-life study
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Background: Acute exacerbations of COPD (AE-COPD) are related to high mortality, especially when hospitalization is needed. Predictors for severe outcomes are still not sufficiently defined which constrains optimal management.

Study objectives: Assess the mortality rate and identify potential determinants of mortality in a real-life cohort of patients hospitalized for AE-COPD.

Design: Retrospective, observational cohort study including all consecutive patients admitted to the pulmonary ward of the University Hospital Maastricht between January 1, 2009 and April 1, 2010 for AE-COPD. Potential predictors were assessed at initial presentation at the emergency room. Primary outcome was mortality at 1 year. Univariate and multivariate time-to-event analysis using Cox proportional hazard models were used for statistical analysis.

Results: 260 patients were enrolled. The mean age was 70.5±11 years, 50.0% were male and 63.4% had advanced COPD. In-hospital mortality rate was 5.8% and the 1-year mortality was 27.7%. Independent risk factors for mortality were age (Hazard Ratio [HR], 1.04; 95% confidence interval [CI], 1.01-1.07), male sex (HR, 2.00; 95% CI, 1.15-3.48), prior hospitalization for AE-COPD in the last 2 years (HR, 2.56; 95% CI, 1.52-4.30), prior recorded congestive heart failure (HR, 1.75; 95% CI, 1.03-2.97), PaCO2≥6.0 kPa (HR, 2.90; 95% CI, 1.65-5.09) and urea≥8.0 mmol/l (HR, 2.38; 95% CI, 1.42-3.99) at admission.

Conclusions: Age, male sex, prior hospitalization for AE-COPD in the last 2 years, congestive heart failure, hypercapnia and elevated levels of urea at presentation are independent predictors of mortality within the first year after admission.

P2014 Atrial fibrillation in critical care patients with respiratory failure: Incidence and clinical effects
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Background: Atrial fibrillation (AF) is the most common arrhythmia in general population and among the critically ill patients. If not treated appropriately it might be an important cause of mortality and morbidity.

Aim: To determine the incidence of AF among critically ill patients and to evaluate its effect on ICU outcome.

Material and method: The EPICS of all the patients (both intubated and nonintubated) at admission were evaluated prospectively for the presence of AF. Patients were grouped into two as AF (+) and AF (-) and compared for their ICU outcomes, cardiac and bronchodilator therapies.

Results: A total of 147 patients (76 male, 71 female) with the mean age of 68.1±15 years were included in the study. AF was found in 36 (25%) patients and among them 33 were diagnosed and received treatment before ICU admission. Although no significant difference was identified at admission APACHE II, length of MV and NIMV, length of ICU stay, mortality was higher in AF (+) patients (36% vs 21%, p=0.05). Congestive heart failure, history of cerebrovascular event and acute renal failure development was significantly higher in AF (+) patients (p<0.05). No significant difference was identified between the two groups when their pre and post admission bronchodilator therapies were compared. Among the 23 discharged patients with AF, 12 (52%) were discharged with warfarin and 11 (48%) with LMWH.

Conclusion: Atrial fibrillation must be given great importance and must be treated appropriately since it can be seen in 25% of critically ill patients and the incidence of heart and renal failure and mortality is higher in those patients.
Background: The BTS guidelines for emergency oxygen use in adults were published in 2008 to ensure the evidence-based safe usage of this commonly given drug. Four national BTS audits have repeatedly shown poor prescription and delivery of oxygen. This was reflected in our data at the Queen Elizabeth Hospital, Woolwich, a 500-bed district general hospital. We investigated the cause of poor oxygen use despite mandatory oxygen prescription (trust guidelines) and incorporation on the bedside prescription chart.

Methods & results: We conducted a survey to medical, nursing, and pharmacy staff. 113 responses were obtained. Assessment of oxygen knowledge was generally good among doctors, but 56% of nurses had not had any teaching on the subject. Amongst doctors 75% felt oxygen would be given no matter what the prescription stated and 60% felt that nurses did not look for the prescription on the drug chart.

Discussion: Despite recognizing its importance, there are significant attitude barriers to better oxygen prescription. As a result doctors don’t prescribe oxygen as they believe nurses will ignore the prescription and nurses don’t sign on the chart as oxygen isn’t prescribed. Attitudes towards oxygen prescription need to be radically changed to improve matters.

Conclusion: An audit of incident cases of failed oxygen prescription is needed to identify adverse incidents. A review of the BTS and trust guidelines is recommended to address possible discrepancies.
P2020
Determination of critical threshold value of SPO2/FiO2 ratio in the diagnosis of acute lung injury
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The determination of the critical threshold of SF ratio for ALI/ARDS was conducted and evaluated. Corresponding measurements of PF and SF ratio was obtained from 106 intubated patients with the diagnosis of Respiratory Failure Type I, non cardiogenic(ALI) admitted in the intensive care units of Philippine Heart Center from June 2008 to December 2011. A Linear Regression Model \[ S/F = 29.6 + 1.09(P/F); p < 0.000 \] was obtained to determine the critical threshold of the SF ratio among Filipino patients. A correlation coefficient of 0.804 was obtained between the PF and SF ratio which yielded the critical threshold for SF ratio of 248 for PF ratio \( \leq 200 \) and a critical threshold SF ratio of 357 for PF ratio \( \leq 300 \). Analysis between ROC AUC of 0.645 and the inverse of FiO\(_2\) correlates with PF ratio (n=0.604) indicate a consistent agreement between that SF and P/F ratios. The SF ratio threshold of 248 (corresponding to P/F \( \leq 200 \)) yielded a sensitivity of 100% and specificity value of 96.23% with a likelihood ratio of 26.5 (95%CI: 6.80 – 103.20) for ARDS, while SF ratio threshold of 357 (corresponding to P/F \( \leq 300 \)) had a sensitivity and specificity of 100% and 98.19%, respectively with likelihood ratio of 66.23 (95%CI: 18.7 – 283.8) for ALI. The high correlation between the SF and PF ratio and critical as well as the consistent relationships between ROC AUC and inverse FiO\(_2\) vs. PF ratio, excellent sensitivity and very satisfactory specificity for ARDS and ALI indicate that the threshold SF ratio of 248 and 357 for PF ratio of 200 and 300 can measure and discriminate ARDS and ALI among critically ill Filipino patients.

P2021
Influence of the pattern of admission on the outcome of patients admitted to a respiratory intensive care unit: Does the step-down pathway differ from the step-up one?
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The influence of the location prior to the admission in a Respiratory Intensive Care Unit (RICU) on the patients' outcome has never been assessed. We have evaluated the clinical outcomes and prognostic indices, according to their provenience, in 175 consecutive patients admitted over 1-year period in our RICU. 37% of the patients were admitted directly from the Emergency Room (ER), 27% from one of the Intensive Care Units (ICUs) within our hospital, 18% from our Respiratory ward (RW) and 18% transferred from other wards (OWs). Patients transferred from our RW had a significantly higher SAPSII score (44±10 vs 34±13,33±13 and 41±14, for ER, ICUs and OWs, respectively), a lower albumin (2.9±0.5 vs 3.2±0.6 and 3.6±0.5 for ICUs and ER, respectively). All the other clinical variables were similar except for CHF that was lower in those patients admitted from the ICUs. Mortality rate was significantly higher in the patients transferred from our RW and OWs (15%,18%,38%,43% for ER, ICUs, OWs and RW, respectively). A Cox multivariate analysis and the mortality risk (Hazard ratio) showed that an high SAPSII score (p=0.0114), low blood albumin levels (p=0.0216), non invasive mechanical ventilation (NIV) (p=0.004) and congestive heart failure (p=0.0481) were significantly associated with the mortality rate. In conclusion, when our RICU acts as “step-down” the mortality rate is lower than when it acts as “step-up”, probably because these latter patients are admitted in end-stage conditions. NIV was surprisingly correlated with a high mortality risk, because in a large subset of patients it was used as ceiling treatment.