SUMMARY

This study was carried out to study ICU outcome of COPD patients with acute respiratory failure. For this purpose 30 COPD patients with acute respiratory failure (23 males and 7 females with mean age 64.53± 8.153) admitted to intensive care unit in Benha and zagzig university hospitals and classified according to their outcome to two groups:

1- ***Survivor group***: 21 patients (**16** males and **5** females with mean age **63.14±7.094)** all have conventional treatment with **6** patients had NIV in the first day of ICU admission (**5** of them success and **1** failure where he had IMV later but not in first day of ICU admission) and **(4)** patients had IMV in first day of ICU admission.

2- ***Non survivor group***: 9 patients (7 males and **2** females with mean age **67.78±9.909)** all had IMV in the first day of ICU admission and (**2)** of them had NIV in the first day of ICU admission with failure outcome where they converted to IMV also in the first day of ICU admission.

On admission to ICU the followings were carried out for all patients:

(1) Full medical history from the patient (if possible) or his relatives.

(2) Full clinical examination: (General & local).

(3) Plain chest and heart X – ray.

(4) Arterial blood gases analysis.

(5) Laboratory investigations (on admission):

A- Serum electrolytes (Sodium and Potassium).

B- Complete blood count (CBC)

C- Routine liver and kidney functions tests.

(6) Electrocardiography (ECG).

(7) Assessment of exacerbation severity**.**

(8) Assessment of Glasgow Coma Scale (GCS).

(9) Assessment of APACHE II Score within 24 hours of admission.

(10) Management & follow up:

Thirty patients needed to receive conventional treatment. Eight Patients of them received NIV plus conventional treatment, of which three patients failed and needed to be intubated and to receive IMV, while, fourteen (14) patients received IMV plus conventional treatment as they were not candidate for NIV from the start.

❖ ***This study revealed the following results:***

1) There was non significant difference between the two studied groups as regard age, sex, duration of COPD, Smoking and associated diseases.
2) There was statistically significant difference (p value <0.05) between survivors and non survivors as regard previous history of ICU admission and previous history of MV with higher tendency of non survivors (all previously admitted to ICU and received MV) to ICU admission and receive MV.
3) There was statistically significant difference between the two studied groups as regard pulse (HR), Respiratory rate which were higher in non survivor group and M.A.P, GCS which were lower in non survivor group; they were predictors of ICU death.

4) There was statistically significant difference between the two studied groups as regard serum Creatinine which was higher in non survivor group when compared with survivor group, also serum sodium and serum albumin showed significant difference between the two studied groups which were lower in non survivor group. So higher Creatinine and lower sodium and albumin were predictors of ICU death.

5) The baseline Arterial Blood Gases (ABGs) were compared between the two studied groups and showed significant difference as regard pH which was lower in non survivors and non significance difference as regard paO2, PaCO2, Hco3 and SaO2 so acidosis was a predictor of ICU death.

6) Baseline APACHE II score and predicted death rates in first day of ICU admission (adjusted for COPD patients) were significantly higher in non-survivor group when compared with survivor group so higher APACHE II score and predicted death rates were predictors ICU death.

7) The mean length of ICU stay was longer length in survivors (4.67±3.44) when compared with non-survivors (2.22±2.224) and was of significant difference in predicting ICU outcome while length of hospital stay was longer for survivors (7.86±4.396) when compared with non-survivors (.00±.000) this significant difference may be explained by low mean of ICU and hospital stay for non-survivors.

8) The outcome of ventilatory support shows significant difference between the two studied groups as regard ventilatory support (NIV and IMV) with tendency to good outcome when NIV used. In this study NIV tried in eight **(8)** selected patients; five **(5)** about (**62.5%)** of them show

successful outcome, the other three **(3)** failed to utilize NIV in the first day and converted to IMV with successful l outcome and two **(2)** of them failed even when IMV used and died.

9) In this study the ICU mortality rate was calculated as **30%** and about **46.66%** of all patients underwent MV and all non survivors were mechanically ventilated. Mortality rate in the mechanically ventilated patients was **64.3%.**

CONCLUSIONS

1. Previous ICU admission and previous history of MV were predictors of need for IMV in COPD patients with acute respiratory failure admitted to ICU.
2. Higher pulse, Respiratory rate, Lower Mean Arterial Pressure (M.A.P) and low Glasgow Coma Scale (GCS) were predictors of increased ICU mortality.
3. High serum Creatinine, low Serum Sodium, low Serum albumin and Acidosis (Low pH) were predictors of increased ICU mortality.
4. Less hospital and ICU length of Stay were predictors of increased ICU mortality.
5. High APACHE II score and high predicted death rate were predictors of increased ICU mortality.
6. NIV might be a good alternative to traditional invasive mechanical ventilation.

RECOMMENDATIONS

1) Prognostic scoring systems especially APACHE II and later version should be extensively validated in ICUs as it may of great helpful in developing ICUs and decrease wasted resources also should be extend to follow up patients in later days not only first 24 hours.

2) NIV should be tried more commonly than today protocols.

3) A comparison for ICU outcome in country-wide manner is needed to postulate and generate Egyptian guidelines for ICU approaches to COPD patients with acute respiratory failure.

4) Markers of ICU outcome may be of value, and search for these markers may more improve outcome prediction and their involvement with functional and physiological measures may be of help.

❖ *The limitations of this study are:*

(1) It would be better to have a larger patient cohort for the statistical analysis in the study with more organized, multidisciplinary protocol to these patients that is not present in the two studied units.

(2) This investigation describes the outcome of a two unit, so findings may not be applicable to other units also investigating the patient status post-discharge was not included in this work.

(3) Pre-hospital pulmonary function test, body mass index, better assessment of nutritional status and socioeconomic study of included patients may play a pivotal role in patients' outcome, but these were not studied here.