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Title: Hyperglycemia is associated with poor outcomes in patients with acute exacerbations of chronic obstructive pulmonary disease

Dr. Hajer 15256 Benabdelghaffar benabdelghaffar10@yahoo.fr MD , Dr. Tawadoud 15257 Khmiss benabdelghaffar10@yahoo.fr , Prof. Soraya 15258 Fenniche benabdelghaffar10@yahoo.fr , Dr. Othmen 15259 Neffati benabdelghaffar10@yahoo.fr , Dr. Leila 15260 Fekih benabdelghaffar10@yahoo.fr , Dr. Dorra 15261 Greb benabdelghaffar10@yahoo.fr , Dr. Hela 15262 Hassene benabdelghaffar10@yahoo.fr , Dr. Hanene 15263 Smadhi benabdelghaffar10@yahoo.fr , Dr. Ines 15264 Akrouit benabdelghaffar10@yahoo.fr , Dr. Dalinda 15279 Belhabib benabdelghaffar10@yahoo.fr and Prof. Mohamed Lamine 15281 Megdiche benabdelghaffar10@yahoo.fr . ¹ Ibn Nafiss, Abderrahmen Mami Hospital, Ariana, Tunisia, 2080 .

Body: Hyperglycemia is associated with poor outcomes from pneumonia and myocardial infarction, but its effect on outcomes from acute exacerbations of chronic obstructive pulmonary disease (AECOPD) has not been established. Records of patients admitted with AECOPD during 6 years were reviewed. The patients were grouped according to blood glucose quartile (group 1, <6 mmol/l (n =30); group 2, 6.0-6.9 mmol/l (n =30); group 3, 7.0-8.9 mmol/l (n =20); and group 4, >9.0 mmol/l (n = 20). The relative risk (RR) of long inpatient stay was significantly increased in group 3 and 4 with a significant difference. For each 1 mmol/l increase in blood glucose the absolute risk of adverse outcomes increased by 12%, p = 0.004. The risk of adverse outcomes increased with increasing hyperglycaemia independent of age, and COPD severity. Isolation of pathogens from sputum increased with increasing blood glucose. Patients in group 3 and 4 had more hypertension, exacerbation was more severe and frequent with a significant difference. COPD may be considered as a novel risk factor for new onset type 2 diabetes mellitus via pathophysiological alterations and diabetes may act as an independent factor, negatively affecting pulmonary function. Diabetes is associated with an increased risk of disease exacerbations and worsened COPD outcomes.

Conclusion:Increasing blood glucose concentrations are associated with adverse clinical outcomes in patients with AECOPD. Tight control of blood glucose reduces mortality in patients in intensive care or following myocardial infarction. A prospective study is required to determine whether control of blood glucose can also improve outcomes from AECOPD.