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**Title:** Comparative study of hospitalized patients with acute exacerbation of COPD with and without carbon dioxide retention

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**Body:** Aim of the study To Compare BMI, severity of COPD and serum albumin levels as risk factors for carbon dioxide retention during AECOPD. It was a hospital based case control study done on 60 patients, with 30 cases and 30 controls. Male patients in age group of 40-80 years, already diagnosed as COPD as per GOLD 2010 guidelines who got admitted with AECOPD were included in the study. All patients who had Paco<sub>2</sub> level more than 46mmHg which was not a compensation for metabolic alkalosis were classified as patients with carbon dioxide retention. Patients who had Paco<sub>2</sub> level less than 46mmHg were classified as patients without carbon dioxide retention. BMI, Severity of COPD, Serum albumin levels were compared between the groups. Data was compiled and analyzed by calculating odds ratio. 29 patients (96.66 %) in case group were having severe or very severe COPD. In the control group 24 patients (80%) had mild or moderate COPD. This had odds ratio of 116. 24 patients (80%) in the case group had low BMI. In the control group only 5 patients (16.66%) had low BMI. This had odds ratio of 20. 28 patients (93.33%) of Case group had low serum albumin. In control group only 7 (23.33%) patients had low serum albumin. This had odds ratio of 46. Conclusions 1. Patients with severe and very severe COPD have a greater risk of having carbon dioxide retention than mild and moderate COPD during AECOPD 2. Patients with low BMI have greater risk of having carbon dioxide retention than patients with normal BMI during AECOPD. 3. Patients with low serum albumin levels have a greater risk of carbon dioxide retention than patients with normal serum albumin during AECOPD.