A Study of NT-ProBNP and ETCO2 in Patients Presenting with Acute Dyspnoea

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Abstract : OBJECTIVES: Early and correct diagnosis may present a significant clinical challenge in diagnosis of patients presenting to Emergency Department with Acute Dyspnoea. The common cause of acute dyspnoea and respiratory distress in Emergency Department are Decompensated Heart Failure (HF), Chronic Obstructive Pulmonary Disease (COPD), Asthma, Pneumonia, Acute Respiratory Distress Syndrome (ARDS), Pulmonary Embolism (PE), and other causes like anaemia. The aim of the study was to measure NT-pro Brain Natriuretic Peptide (BNP) and exhaled End-Tidal Carbon dioxide (ETCO2) in patients presenting with dyspnoea. MATERIAL AND METHODS: This prospective, cross-sectional and observational study was performed at the Government Medical College and Hospital, Nagpur, between October 2019 and October 2021 in patients admitted to the Medicine Intensive Care Unit. Three groups of patients were compared: (1) HFrelated acute dyspnoea group (n = 52), (2) pulmonary (COPD/PE)-related acute dyspnoea group (n = 31) and (3) sepsis with ARDS-related dyspnoea group (n = 13). All patients underwent initial clinical examination with a recording of initial vital parameters along with on-admission ETCO2 measurement, NT-proBNP testing, arterial blood gas analysis, lung ultrasound examination, 2D echocardiography, chest X-rays, and other relevant diagnostic laboratory testing. RESULTS: 96 patients were included in the study. Median NT-proBNP was found to be high for the Heart Failure group (11,480 pg/ml), followed by the sepsis group (780 pg/ml), and pulmonary group had an Nt ProBNP of 231 pg/ml. The mean ETCO2 value was maximum in the pulmonary group (48.610 mmHg) followed by Heart Failure (31.51 mmHg) and the sepsis group (19.46 mmHg). The results were found to be statistically significant ($P < 0.05$). CONCLUSION: NT-proBNP has high diagnostic accuracy in differentiating acute HF-related dyspnoea from pulmonary (COPD and ARDS)-related acute dyspnoea. The higher levels of ETCO2 help in diagnosing patients with COPD.
Keywords : NT PRO BNP, ETCO2, dyspnoea, lung USG
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