Title: Positive association between the plasma levels of 5-hydroxyindoleacetic acid and the severity of depression in patients with chronic obstructive pulmonary disease

Ms. Hanako 12305 Oda odahana@med.kurume-u.ac.jp MD , Ms. Chie 12306 Koga rwrcw559go@yahoo.co.jp MD , Mr. Shinichi 12307 Takenaka takenaka@med.kurume-u.ac.jp MD , Mr. Tomotaka 12308 Kawayama kawayama-tomotaka@med.kurume-u.ac.jp MD and Mr. Tomoaki 12309 Hoshino hoshino@mem.kurume-u.ac.jp MD . ¹ Division of Respirology, Neurology and Rhumatology, Department of Medicine, Kurume Univercity School of Medicine, Kurume, Fukuoka, Japan, 8300011 ; ² Division of Respirology, Neurology and Rhumatology, Department of Medicine, Kurume Univercity School of Medicine, Kurume, Fukuoka, Japan, 8300011 ; ³ Division of Respirology, Neurology and Rhumatology, Department of Medicine, Kurume Univercity School of Medicine, Kurume, Fukuoka, Japan, 8300011 ; ⁴ Division of Respirology, Neurology and Rhumatology, Department of Medicine, Kurume Univercity School of Medicine, Kurume, Fukuoka, Japan, 8300011 and ⁵ Division of Respirology, Neurology and Rhumatology, Department of Medicine, Kurume Univercity School of Medicine, Kurume, Fukuoka, Japan, 8300011 .

Body: Background: The role of plasma monoamines in patients with chronic obstructive pulmonary disease (COPD) with depression is unclear. Objective: To investigate monoamines in 20 depressed patients with COPD, the plasma concentrations of serotonin, 5-hydroxyindoleacetic acid (5-HIAA), homovanillic acid, and 3-methoxy-4-hydroxyphenylglycol (MHPG) were measured and compared with those in 50 non-depressed COPD patients, and also with 23 age- and gender-matched non-smokers and 13 smokers as non-depressed healthy controls. Methods: Diagnosis of depression was assessed using the Centre for Epidemiologic Studies Depression Scale. Plasma concentrations of monoamines were measured by high-performance liquid chromatography. Results: None of the depressed COPD patients had suicidal ideation. The plasma 5-HIAA level [median, (25% and 75% quartiles)] in depressed COPD patients [6.8 ng/mL, (4.9 and 13.1)] was significantly higher than in non-depressed COPD patients [5.4, (4.2 and 7.5)] (p=0.022) and non-smokers [5.1 (3.8 and 7.2)] (p=0.041), but not smokers [4.7, (4.0 and 6.7)] (p>0.05). The plasma 5-HIAA level (r=0.24, p=0.049) was significantly associated with the severity of depression in patients with COPD. The plasma MHPG level was significantly higher in depressed COPD patients (p=0.043) than in smokers, but was not higher than that in non-depressed COPD patients or non-smokers, although the level of MHPG was not associated with the severity of depression. Conclusion: The plasma 5-HIAA level is increased in depressed COPD patients. Plasma monoamines may be a good biomarker for detection of depression in patients with COPD.