

Gender related differences in clinical presentation of ischemic heart disease patients with concomitant chronic obstructive pulmonary disease

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AA SA, conceived data, AA SA MF drafted the study, UA NUH MAR collected data, AA SA MF did statistical analysis and data interpretation, AA SA critical review manuscript, All approved final version of manuscript to be publish.

Declaration of conflicting interests

The Authors declares that there is no conflict of interest.

ABSTRACT

Background: Ischemic heart disease (IHD) is the leading cause of morbidity and mortality in non-communicable group of diseases. By year 2030, Chronic Obstructive Pulmonary Disease (COPD) will be the third leading cause of death globally. IHD and COPD coexist in 18-50% of patients in different studies.

Objective: Objective of the present study was to determine gender related differences in clinical presentation of ischemic heart disease patients with concomitant chronic obstructive pulmonary disease (COPD).

Methods: This was a descriptive cross-sectional study in Ischemic heart disease patients presenting to Cardiology and Pulmonology consultant clinic. Written informed consent were taken from all study participants. All ischemic heart disease patients were evaluated for presence of COPD on the basis of any spirometric findings. Data were recorded in structured proforma regarding clinical presentation to determine any gender-related differences.

Results: Total of 133 patients with ischemic heart disease were evaluated for presence of COPD. Mean age of study participants were 58 + 11.9 yrs. Seventy eight (59%) and 55 (41%) were males and females respectively. 59 (44%) were smokers and similar number were found to be having COPD. Males with concomitant COPD were 40 (68%). Common presenting symptoms of chest pain, breathlessness, cough and palpitations were reported in 82, 60, 40 and 29% of IHD patients respectively. However, IHD with concomitant COPD presented with symptoms of breathlessness 78%, cough 64%, chest pain 49% and palpitations in 31% only.

Conclusion: IHD patients with COPD were more common among males than females. Breathlessness and cough were more common presenting symptoms in IHD patients with concomitant COPD than non-COPD.

Keywords: Ischemic heart disease; COPD; Gender difference; Symptoms; Clinical presentation.

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Introduction

Ischemic heart disease (IHD) is the leading cause of morbidity and mortality in non-communicable group of diseases.¹ By year 2030, Chronic Obstructive Pulmonary Disease (COPD) will be the third leading cause of death globally.² IHD and COPD coexist in 18-50% of patients in different studies.^{3,5} This association can be due to sharing common pathophysiology and risk factors.^{6,7} Diagnosis of COPD in patients with ischemic heart disease remains a challenge not only

in emergency department but also in any clinical setting^{8,9} mainly because of common symptomatology.

Gender differences in clinical manifestations of IHD patients was a well-documented phenomenon in literature.^{10,11} Similarly, COPD patients revealed gender related differences in clinical presentation, treatment and outcome.^{12,13} However, in patients with IHD and COPD, gender related differences in clinical presentation may help to identify undiagnosed COPD

and thus leads to appropriate management.

This study was conducted with the objective to determine gender related differences in clinical presentation among IHD patients with COPD.

Methods

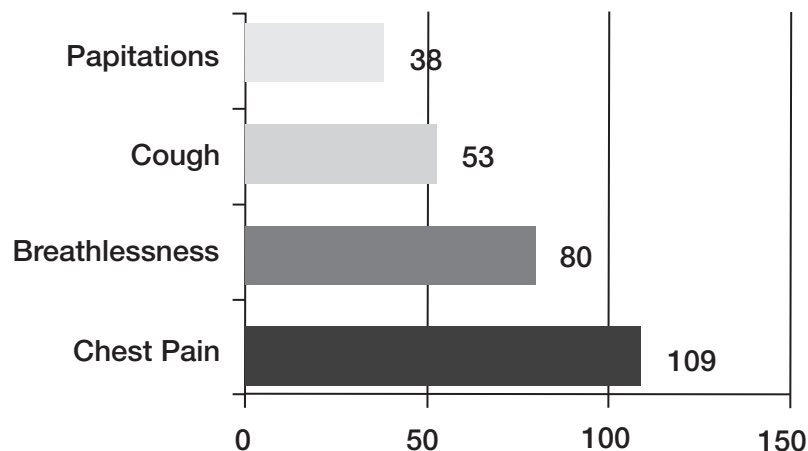
This was a descriptive cross sectional study conducted among ischemic heart disease patients coming to private clinic during nov 2015 till feb 2016. Ethical approval is taken from institutional board. Consecutive sampling technique were employed. Written informed consent were taken from all patients fulfilling the inclusion criteria. Patients with Asthma, Pneumonia, tuberculosis, Congestive cardiac failure, corpulmonale, chronic kidney disease, sinusitis, pleural effusion or any cancer were excluded from the study. Data regarding demographics, smoking history and presenting symptoms were recorded on a structured questionnaire. COPD was diagnosed on the basis of spirometry findings of FEV1/FVC < 0.7 of percent predicted performed according to ATS guidelines by a trained technician. All data was entered in spss version 19 and analyzed. Numeric variables like age were computed in mean + SD, whereas categorical variables like gender, smoking history, presence of COPD, cough, breathlessness etc, were computed in percentages. Difference in

male and female were determined using chi-square test with $p < 0.05$ set as statistically significance.

Results

Total of 133 patients with Ischemic heart disease, who gave written informed consent and fulfilled the inclusion criteria were recruited in the study. Mean age of the study participants were $58 + 11.9$ yrs. Seventy eight (59%) and 55 (41%) were males and females respectively. Distribution of common presenting symptoms was shown in graph 1, with chest pain and breathlessness most frequent symptom reported by 82 and 60 % of IHD patients. Mean Body Mass Index (BMI) of the study participants were $27 + 6.7$ Kg/m². COPD was diagnosed in 59 (44 %) of IHD patients. Smoking history was found in 59 (44%) of IHD patients with 30% of all IHD patients had > 10 pack year history of smoking.

Data comparing values of different variables between male and female study participants were given in Table 1. Independent sample t test was used to determine difference between mean age and mean BMI of male and female groups, whereas for categorical variables like COPD, smoking, chest pain, breathlessness, cough and palpitations chi square was used to determine difference between male and female study participants. $P < 0.05$ was found for BMI,



Graph 1: Frequency distribution of common symptoms in patients of Ischemic heart disease.

COPD, Smoking history, Cough and breathlessness indicating that there was a statistically significant difference between male and female IHD patients regarding these variables.

Further analysis of symptoms between male and female IHD patients with and without COPD was

shown in table 2. It revealed that Patients with COPD more frequently presented with breathlessness and cough as compare to non COPD patients.

Discussion

Ischemic heart disease and COPD frequently co-exist

Table 1: Gender related differences of study variables in IHD patients.

	Total N=133	Male N=78	Female N=55	p- value (t-test /chi-square)
Age in yrs (Mean ± SD)	133	59 ± 11.6	56 ± 12	0.11
BMI (Mean ± SD)	133	25± 5.6	29± 7.6	0.002*
COPD	59	40	19	0.05*
Smoking history	59	54	5	0.00*
Chest Pain	109	65	44	0.62
Breathlessness	80	54	26	0.01*
Cough	53	40	13	0.00*
Palpitations	38	25	13	0.29

*P ≤ 0.05 statistically significant

Table 2: Gender Versus Common Presenting Symptoms of IHD patients with and without COPD.

		Total N (%)	Palpitations N (%)	Cough N (%)	Breathlessness N (%)	Chest pain N (%)
COPD	Male	40	14 (35)	29 (73)	35 (88)	33 (83)
	Female	19	4 (21)	9 (47)	11 (59)	16 (84)
	Total	59	18 (31)	38 (64)	46 (78)	49 (83)
No COPD	Male	38	11 (29)	11 (29)	19 (76)	32 (84)
	Female	36	9 (25)	4 (11)	15 (42)	28 (78)
	Total	74	20 (27)	15 (20)	34 (46)	60 (81)

, though may remain undiagnosed.¹⁴⁻¹⁶ In our study, 59 (44%) patients of IHD were found to be suffering from COPD and interestingly, smokers were also 44%. This result is similar to other studies conducted nationally and internationally, though in young males with acute myocardial infarction, there was up to 80% prevalence of current smoking.¹⁷ In our study we found 5 female smokers as well with ischemic heart disease. This is an important neglected risk factor among female patients in our setup.^{18,19} However, we found 19 female IHD patients with concomitant COPD, their risk factor could be exposure to biomass fuel.

Mean age of our study participants were 58 ± 11.9 yrs.

There was no significant difference in the age of male and female study participants, emphasizing the importance that after 50 years, gender related difference between male and female become equal in ischemic heart disease patients.²⁰ Body Mass Index of study participants were 27 + 6.7 Kg/m². However, our study showed a statistically significant difference between male and female BMI. Female BMI was in obese range and similar higher BMI among females were found in other studies.^{21,22} High BMI among female participants can be explained with our cultural norms, mostly elderly females due to lack of exercise, eating habits were obese, moreover, patients with IHD- COPD physical activity was limited due to

symptoms, that further results in higher BMI.

Patients with IHD- COPD, share common presenting symptoms, thus making the diagnosis difficult, when presenting to emergency department.²³⁻²⁵ Different biochemical markers being studied in order to differentiate between the two diseases, however, as COPD remained undiagnosed among ischemic heart disease patients, therefore, evaluating presenting symptoms in depth will help to point towards this important and neglected co-morbidity (COPD), that is now emerging as an independent risk factor for Myocardial infarction.²⁶ In our study, we found out breathlessness and cough as statistically significant presenting symptoms between male and female gender and also help in differentiating between IHD-COPD patients, similar results were found in literature.^{13,27}

We found out important findings in this study that can be utilized as a basis for future studies in this neglected population of IHD-COPD, with more robust study design. Moreover, this was descriptive cross-sectional study of a single centre.

Conclusion

IHD patients with COPD were more common among males than females. Breathlessness and cough were more common presenting symptoms in IHD patients with concomitant COPD than non-COPD.

References

1. Griffo R, Spanevello A, Temporelli PL, Faggiano P, Carones M, Magni G, et al. Italian Survey on Prevalence and Disease Management of Chronic Heart Failure and Chronic Obstructive Pulmonary Disease comorbidity in ambulatory patients. *SUSPIRIUM* 2014;82(1):29-34. Epub 2014/12/09.
2. Global Initiative for Chronic Obstructive Lung Disease (GOLD) Global Strategy for the Diagnosis, Management and Prevention of COPD. Updated 2014. Available from: http://www.goldcopd.it/materiale/2015/GOLD_Pocket_2015.pdf.
3. Donaldson GC, Hurst JR, Smith CJ, Hubbard RB, Wedzicha JA. Increased risk of myocardial infarction and stroke following exacerbation of COPD. *Chest* 2010;137(5):1091-7.
4. Hasan A AN, ParvezA, Beg M, Bhargava R. Understanding the relation between COPD and coronary artery disease. *JIACM* 2014;15(2):120-4.
5. Hoiseth AD, Omland T, Hagve TA, Brekke PH, Soyseth V. Determinants of high-sensitivity cardiac troponin T during acute exacerbation of chronic obstructive pulmonary disease: a prospective cohort study. *BMC pulmonary medicine* 2012;12:22.
6. Lange P, Mogelvang R, Marott JL, Vestbo J, Jensen JS. Cardiovascular morbidity in COPD: A study of the general population. *Copd* 2010;7(1):5-10.
7. Mascarenhas J, Azevedo A, Bettencourt P. Coexisting chronic obstructive pulmonary disease and heart failure: implications for treatment, course and mortality. *Current opinion in pulmonary medicine* 2010;16(2):106-11.
8. Le Jemtel TH, Padeletti M, Jelic S. Diagnostic and therapeutic challenges in patients with coexistent chronic obstructive pulmonary disease and chronic heart failure. *Journal of the American College of Cardiology* 2007;49(2):171-80.
9. Safdar B, Nagurney JT, Anise A, DeVon HA, D'Onofrio G, Hess EP, et al. Gender-specific research for emergency diagnosis and management of ischemic heart disease: proceedings from the 2014 Academic Emergency Medicine Consensus Conference Cardiovascular Research Workgroup. *Academic emergency medicine : official journal of the Society for Academic Emergency Medicine* 2014;21(12):1350-60.
10. Dunlay SM, Roger VL. Gender differences in the pathophysiology, clinical presentation, and outcomes of ischemic heart failure. *Current heart failure reports* 2012;9(4):267-76.
11. Garcia-Garcia C, Molina L, Subirana I, Sala J, Bruguera J, Aros F, et al. Sex-based differences in clinical features, management, and 28-day and 7-year prognosis of first acute myocardial infarction. *RESCATE II study. Revista espanola de cardiologia (English ed)* 2014;67(1):28-35.
12. Kilic H, Kokturk N, Sari G, Cakir M. Do females behave differently in COPD exacerbation? *International journal of chronic obstructive pulmonary disease* 2015;10:823-30.
13. Cydulka RK, Rowe BH, Clark S, Emerman CL, Rimm AR, Camargo CA, Jr. Gender differences in emergency department patients with chronic obstructive pulmonary disease exacerbation. *Academic emergency medicine : official journal of the Society for Academic Emergency Medicine* 2005;12(12):1173-9.
14. Ashraf A, Khan S, S A. Frequency of modifiable risk factors and their outcome in Patients with

- Acute Coronary Syndrome admitted to Cardiology Department, Khyber Teaching Hospital (KTH), Peshawar. *Rawal Med Journal* 2012;37(3):273-6.
15. Campo G, Pavasini R, Malagu M, Mascetti S, Biscaglia S, Ceconi C, et al. Chronic obstructive pulmonary disease and ischemic heart disease comorbidity: overview of mechanisms and clinical management. *Cardiovascular drugs and therapy / sponsored by the International Society of Cardiovascular Pharmacotherapy* 2015;29(2): 147-57.
 16. Chen W, Thomas J, Sadatsafavi M, FitzGerald JM. Risk of cardiovascular comorbidity in patients with chronic obstructive pulmonary disease: a systematic review and meta-analysis. *The Lancet Respiratory medicine* 2015;3(8):631-9.
 17. Hbejan K. Smoking Effect on Ischemic Heart Disease in Young Patients. *Heart Views : The Official Journal of the Gulf Heart Association* 2011;12(1):1-6.
 18. Rigotti NA, Clair C. Managing tobacco use: the neglected cardiovascular disease risk factor. *European heart journal* 2013;34(42):3259-67.
 19. Ashraf A, Ashraf S, R A. Tobacco exposure; a neglected modifiable cardiovascular risk factor in female patients admitted with acute coronary syndrome. *Pakistan Journal of Chest medicine* 2013;19(1).
 20. Smith MC WJ. Epidemiology and clinical impact of major comorbidities in patients with COPD. *International journal of chronic obstructive pulmonary disease* 2014;9:871-88.
 21. Schwab P, Dhamane AD, Hopson SD, Moretz C, Annavarapu S, Burslem K, et al. Impact of comorbid conditions in COPD patients on health care resource utilization and costs in a predominantly Medicare population. *International journal of chronic obstructive pulmonary disease* 2017;12:735-44.
 22. Rothnie KJ, Yan R, Smeeth L, Quint JK. Risk of myocardial infarction (MI) and death following MI in people with chronic obstructive pulmonary disease (COPD): a systematic review and meta-analysis. *BMJ open* 2015;5(9):e007824.
 23. Aryal S, Diaz-Guzman E, Mannino DM. COPD and gender differences: an update. *Translational research : the journal of laboratory and clinical medicine* 2013;162(4):208-18.
 24. Ashraf S, Ashraf A, M Z. Comparison of presenting clinical features and outcome of Ischemic heart disease patients admitted to coronary care unit with and without COPD. *Oral Presentation.. Respirology* 2016;21(APSR6-0488):20-79.
 25. Chang CL, Robinson SC, Mills GD, Sullivan GD, Karalus NC, McLachlan JD, et al. Biochemical markers of cardiac dysfunction predict mortality in acute exacerbations of COPD *Thorax*. 2011;66(9):764-8.
 26. de Lucas-Ramos P, Izquierdo-Alonso JL, Rodriguez-Gonzalez Moro JM, Frances JF, Lozano PV, Bellon-Cano JM. Chronic obstructive pulmonary disease as a cardiovascular risk factor. Results of a case-control study (CONSISTE study). *International journal of chronic obstructive pulmonary disease* 2012;7:679-86.
 27. Das S, Mukherjee S, Kundu S, Mukherjee D, Ghoshal AG, Paul D. Presence and severity of COPD among patients attending cardiology OPD of a tertiary healthcare centre. *Journal of the Indian Medical Association* 2010;108(7):406-9.