

Original Article

Complex DECAF scores prolong the hospital stay of patients suffering from COPD

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Abstract

Objective Patients with Complex the Dyspnoea, Eosinopenia, Consolidation, Acidaemia, and atrial Fibrillation (DECAF) scores prolong the hospital stay of patients suffering from Chronic Obstructive Pulmonary Disease (COPD). **Method** Patients admitted to respiratory wards in tertiary care hospital, Baluchistan with COPD between June 2016 to September, 2015 were prospectively reviewed and DECAF score applied to each patient. Duration of hospitalization was then correlated with total DECAF scores. **Result** Out of 118 total admissions, 103 were reviewed as 15 patients died. 71% were male, mean age was 69.6 years and average of 15 days of hospitalization. The duration was longest in those with DECAF scores of 3-5 and lowest in those with scores of 0-1. **Conclusion** The DECAF Score is a simple and effective clinical tool that can risk stratify hospitalized patients with COPD and could therefore help clinicians managing this fatal condition.

Keywords

DECAF, COPD, Chronic Obstructive Pulmonary Disease, Dyspnoea, Eosinopenia, Consolidation, Acidaemia, atrial Fibrillation

Introduction

More than 2,410 million globally suffers from COPD with Pakistan sharing the burden of 6.9 million people. COPD is one of the biggest threat to health and set to become the 4th leading cause of death by 2030¹. Cigarette smoking is the most commonly encountered risk factor of COPD disease found in Pakistan. Characterised by persistent airflow limitation associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases. Clinical features include shortness of breath, persistent cough, coughing up mucus, wheezing, fatigue/tiredness, weight loss, morning headaches are alarming signs of the disease. In Pakistan, it is more prevalent in men as compared to women and prevalence of COPD increases with age, primarily affects people of 40 years and above². The

challenges in COPD management are access, cost, and non-adherence/poor compliance. Access to medications for chronic disease management is limited in many low and middle-income countries, resulting in substandard care and preventable morbidity and mortality. Hospitalisation due to serious exacerbations of COPD is common, and subsequent mortality high^{3, 4}. The DECAF score was derived for accurate prediction of mortality and risk stratification to inform patient care. Severe exacerbations of COPD account for one in eight hospital admissions and are associated with worsening symptoms, lung function, health-related quality of life, and mortality risk⁴. Usually Clinicians are unable accurately to predict prognosis in patients hospitalised with acute COPD because of that a robust prediction tool, which stratifies patients according to mortality risk is always a need

that can help in identifying low-risk groups, and early escalation or appropriate palliation for high-risk groups. The Dyspnoea, Eosinopenia, Consolidation, Acidaemia, and atrial Fibrillation (DECAF) score was derived in a large cohort of consecutive patients hospitalised with COPD, is simple to apply at the bedside and predicts in hospital mortality using indices routinely available on admission⁵. The score comprises five predictors, the strongest of which is stable state dyspnoea, as measured by the extended Medical Research Council Dyspnoea score⁶. The major objective behind this study was to explore the significance of using DECAF scoring in patients suffering from COPD in unexplored populace of Baluchistan as well as to identify the relation of higher DECAF scores with duration of hospitalization.

Methodology

This study was carried out at the Chest & Department from November 2015 to April 2016. It included 118 patients with a mean age of 69.6 ± 7 ; Out of 118 total admissions, 103 were reviewed as 15 patients died. 71% were male, mean age was years and average of 15 days of hospitalization. The duration was longest in those with DECAF scores of 3-5 and lowest in those with scores of 0-1. All studied patients were subjected Thorough medical history, clinical examination, Plain Chest X- ray, Routine laboratory investigations, Assessment of the DECAF Score according to Steer et al. Statistical analysis was performed with the SPSS statistical software package version 20 (SPSS Inc., Chicago, L, USA). P-value <0.05 was considered significant.

Result

The results shows the socio-demographic data of all studied patients with the presence of cerebrovascular disease, atrial fibrillation and renal comorbidity. The data shows the

average serum levels of potassium, urea, creatinine, glucose, CRP and albumin. Also, hemoglobin level and eosinophil that showed altered values.

Table 1 DECAF Score.

Variable	Score
Dyspnoea	
eMRCd 5a	1
eMRCd 5b	2
Eosinopenia ($<0.05 \times 10^9/l$)	1
Consolidation	1
Acidaemia (pH <7.3)	1
Atrial fibrillation	1
Total DECAF Score	6

DECAF, Dyspnoea, Eosinopenia, Consolidation, Acidaemia and atrial Fibrillation; eMRCd, extended MRC dyspnoea.

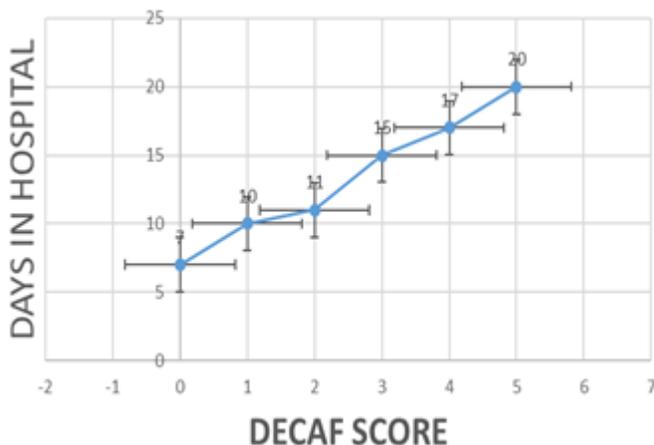
Table 2 Clinical and Radiological Findings at Admission.

Purulent sputum	60%
Ineffective cough	11.4%
Lower limb edema	25.7%
Acute confusion	10.3%
Herat rate/min	100.3 \pm 21.2
Systolic blood pressure (mm Hg)	140 \pm 28
Diastolic blood pressure (mm Hg)	77.5 \pm 15.7
Respiratory rate/min	24.5 \pm 5.7

Table 3 Laboratory Investigations.

Parameter	Survivors (no=175)
Sodium (mEq/l)	136.4±4.6
Potassium (mEq/l)	4.3 ±0.5
Chloride (mEq/l)	98.6 ±8.9
Urea (mmol/l)	6.5 ±2.1
Creatinine (mg/dl)	0.92 ±0.21
Albumin (g/dl)	3.9 ±0.45
Glucose (mg/dl)	126±18
Hemoglobin (g/dl)	13.8 ±1.8
CRP (mg/dl)	5.6 ±3.6
White cell count (·103/dl)	11.9 ±3.6
Neutrophil count (·103/dl)	9.2 ±3.4
Esinophil count (·103/dl)	0.1 ±0.1
Cerebrovascular disease	11.6%
Ischemic heart disease	31%
Hypertension	37%
Diabetes	5.3%
Atrial fibrillation	7.6%
Renal comorbidity	6.2%

Graph 1 showing hospitalization duration and DECAF Score



Discussion

The changeability in mortality rates globally as well as locally for patients with COPD admitted for critical respiratory failure suggests that significant heterogeneity exists among populations⁷. The differences in patient physiognomies, quality of care as well as ecological account is of much variability. There is relatively less amount of literature available to make these considerations more factual. Recognizing upon hospitalization those at higher risk of developing complications during their hospital stay and could be useful for determining the appropriate level of care, pivotal for recognition of effective therapies, and timely discharges. As DECAF Score is believed to accurately predict in hospital mortality for patients with COPD⁸. The DECAF Score can be used as a simple prognostic tool, incorporating clinical and laboratory information available routinely on admission in patients hospitalized. Most of the predictors associated with higher complications incidence and prolong hospitalization (Graph:1) are consistent with previously published studies in COPD like esinopenia was associated with a higher in hospital mortality in AECOPD^{9,10}, but the study population was small ($n = 118$). Our results show that esinopenia and may be a useful marker of sepsis in patients who are receiving intensive care. The strong prognostic effect of eosinopenia may reflect the severity of the accompanying acute inflammatory response¹¹. The DECAF Scores in present study shows promise for the risk stratification of patients hospitalized for each grade of the DECAF Score with risk categories. Our Findings suggest that a high DECAF Score (≥ 3) might be used as a guide to early escalation of care.

Conclusion

Duration of hospitalization depends on several factors like physiological status, severity, co-morbidities and accessibility of health and communal care. Patients with high DECAF scores were generally more unwell and have longer recovery duration. Once suitable these patients should be discharged with help of early supported care teams.

Conflict of Interest

None.

Acknowledgement

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