Burden of Essential Tremor (ET): Associated Morbidities (AMs), Healthcare Resource Utilization and Costs in Medicare Patients on Drug Therapy

Liana Hennum[1], Ali Samiian[1], Dhira Khosla[1], Elan Louis[2]

INTRODUCTION

Essential tremor (ET) is among the most common movement disorders affecting 7 million individuals in the US. While traditionally regarded as benign, ET is associated with disabling motor and non-motor symptoms including depression and anxiety. Patients with ET have been shown to have a higher number of comorbidities than non-ET patients[1], and this could lead to greater medication use. Previous research has demonstrated a high frequency of side effects such as lightheadedness, bradycardia and fatigue due to pharmacotherapy in ET[2,3], yet data on the economic consequences are limited. Understanding the relationship between the medical complexity of ET patients, concurrent medication use and healthcare costs is crucial.

OBJECTIVES

The aim of this study was to compare the economic consequences, including healthcare resource utilization (HCRU) and costs, of associated morbidities (AMs) between sub-groups of those essential tremor (ET) patients aged 65 and older who are taking commonly prescribed ET medications (0, 1, and 2) and non-ET patients.

DESIGN

Using the Merative MarketScan database, (1/1/2017-6/30/2020), ET patients (n=10,343) aged 65 and older were identified. The index date was the earliest record of an ET diagnosis (G25.0). Non-ET patients (n=429,609) were also identified and served as a comparator in this analysis.

Patients with a diagnosis of ET were stratified into subgroups taking 0, 1, and 2 of commonly prescribed ET drugs (propranolol, primidone, topiramate, gabapentin, and atenolol).

Rates of associated morbidities (depression, anxiety, falls, substance abuse), Charlson Comorbidity Index[4], healthcare resource utilization (HCRU) and costs were assessed across groups over a 24-month follow-up period.

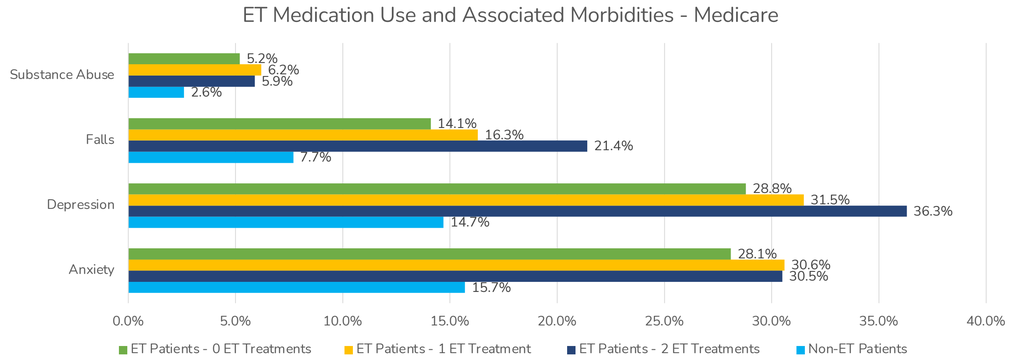
RESULTS

Of the ET patients, 58.6% of patients were taking none of the commonly prescribed ET drugs which indicates a significant portion of these patients were untreated. 35% of ET patients were taking 1 ET medication and approximately 6% of patients were taking 2 ET medications.

RESULTS (CONT.)

ET Treatment Groups	ET Study Population (N)	% of Population	Average Age	% Female	CCI
All ET Patients	10,343	100.0%	75.7	53.2%	2.7
0 Qualified ET treatments	6,061	58.6%	75.5	53.0%	2.6
1 Qualified ET treatment	3,617	35.0%	75.1	53.2%	2.7
2 Qualified ET treatments	597	5.8%	74.0	54.9%	3.1
Non-ET patients	429,609	n/a	74.0	57.0%	1.9

In the two years following index date, AMs increased with additional ET drugs and were higher than those seen in non-ET patients: substance abuse 5.2% vs. 6.2% vs. 5.9% vs. 2.6% (0, 1, 2 medications, non-ET respectively); falls 14.1% vs. 16.3% vs. 21.4 vs. 7.7% (0, 1, 2 medications, non-ET respectively); depression 14.7% vs. 28.8% vs. 31.5% vs. 36.3% vs. 14.7% (0, 1, 2 medications, non-ET respectively); anxiety 28.1% vs. 30.6% vs. 30.5% vs. 15.7% (0, 1, 2 medications, non-ET respectively).



Additionally, over the two-year period, HCRU and costs increased as patients took additional ET medications and were higher than in non-ET patients. Rates of all cause inpatient admissions and emergency room visits (total costs) were 29.6% and 45.1% ($37,300) vs. 34.2% and 49.0% ($50,873) vs. 41.9% and 53.4% ($63,196) vs. 18.7% and 31.9% ($24,626) (0, 1, 2 ET medications, non-ET respectively).

Healthcare Resource Utilization (HCRU)	0 ET Treatments N = 6,061	1 ET Treatment N = 3,617	2 ET Treatments N = 597	Non-ET N = 429,609
Patients with an inpatient admission % (N)	29.6% (1,797)	34.2% (1236)	41.9% (250)	18.7% (80,475)
Patients with an ER visit % (N)	45.1% (2,732)	49.0% (1771)	53.4% (319)	31.9% (136,912)
Length of Stay (LOS) (Mean) in days	7.9	7.6	8.5	6.4
Pharmacy costs (Mean)	$7,756	$9,739	$11,639	$5,675
Total costs (Mean Total medical + Outpatient pharmacy)	$37,300	$50,873	$63,196	$24,626

1. Current or former employee of Cala Health, San Mateo, CA 2. University of Texas Southwestern Medical Center

CONCLUSIONS

This analysis highlights a significant treatment gap in the management of ET in that 58.6% of Medicare patients are untreated. Furthermore, amongst ET patients, AMs such as depression, anxiety, falls and substance abuse are higher than in non-ET patients, but also trend higher as patients take increasing number of ET medications. A similar increase in emergency room visits, inpatient admissions and LOS is seen as patients take additional ET medications. While ET has been traditionally regarded as benign, this analysis demonstrates the medical complexity of ET patients as well as associated healthcare costs.

REFERENCES

1. *Dai D, Samiian A, Fernandes J, Coetzer H. Multiple comorbidities, psychiatric disorders, healthcare resource utilization and costs among patients with essential tremor: a retrospective observational study in a large US commercially insured and Medicare Advantage population. JHEOR. 2022;9(2):37-46. doi:10.36469/jheor.2022.37307*
2. Ferreira, J. MDS Evidence-Based Review of Treatments for Essential Tremor.2019. Accessed at: https://www.movementdisorders.org/MDS-Files1/PDFs/EBM-Papers/Ferreira_et_al-2019-Movement_Disorders.pdf
3. International Essential Tremor Foundation. Essential Tremor in Adult Patients. Accessed at http://eguideline.guidelinecentral.com/i/1380755-essential-tremor-advisory-ietf/0?
4. Charlson, M..E, Charlson Comorbidity Index. Accessed at: https://www.capc.org/documents/download/290/

ACKNOWLEDGEMENTS

The authors thank the Merative team for access to the Merative MarketScan database and data analysis.