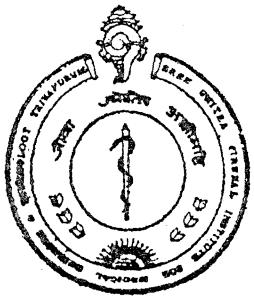

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY

THIRUVANANTHAPURAM - 695 011

PROJECT REPORT

NAME	:	DR.SYLAJA P.N.
PROGRAMME	:	D.M. Neurology
MONTH & YEAR OF SUBMISSION	:	NOVEMBER 1998

CERTIFICATE

I, Dr.....SYLAJA P.N.....hereby declare that I have actually performed all the procedures listed/carried out the project under report.

Signature.....

Place: **Trivandrum**

Name in capital letters

Date :

.....SYLAJA P.N.....

Forwarded. She has carried out the project under report.

Signature
Head of the Department

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY TRIVANDRUM 695 011	Name	
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	Date	

PROJECT REPORT DONE

TITLE

THE DIRECT COST OF CARE OF PERSONS WITH EPILEPSY

NAME : **DR. SYLAJA P.N.**

PROGRAMME : **D.M. NEUROLOGY**

MONTH & YEAR OF SUBMISSION : **NOVEMBER 1998**

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY TRIVANDRUM 695 011

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SYLAJA P.N.

CONTENTS

INTRODUCTION

Epilepsy is a universal problem and every country whether developed or developing has to consider the economic burden of epilepsy and the implications of cost effective treatments as patient prevalence of active epilepsy is between 5 & 8 / 1000 in most countries and life time prevalence about 3%. Epilepsy imposes a substantial burden on individuals and society as a whole. Many of the persons are seriously impaired by the disability and associated neuro-psychological and behavioural problems. In addition to utilising the resources for treatment and rehabilitation it also prevents persons from contributing to their full potential and imposes cost on society. In this era of increasingly constrained health care resources it is important to understand the relative value of health technologies in terms of their cost effectiveness or balance between resources they consume and health outcomes they can deliver.

Economic aspects of epilepsy received a public awareness for the first time in Oslo at the International Epilepsy Congress in 1993. The Commission discussed the cost of epilepsy and also the cost-benefit evaluations.

The cost of illness varies in different prognostic groups.

1) permanent remission after initial diagnosis and Rx.
2) relapse after medication is withdrawn.
3) delayed remission with follow up treatment.
4) persistent but rare seizures.
5) non institutionalized with frequent seizures.
6) Institutionalized.

Cost of epilepsy involves different kinds of cost, both direct and indirect costs.

Direct medical costs involves expenses related directly to the provision of medical care such as cost of physician services, outpatient services, antiepileptic drugs and diagnostic investigations. Direct non medical costs involves transportation, care provided by family and friends, rehabilitation and special education.

Indirect costs are that related to consequence of illness rather than to specific delivery of medical attention which includes loss of earnings due to reduced productivity, sick leave and under employment. The effect of epilepsy on the probability of working until a given age will be estimated and the expected earnings for people of a given age who are currently employed will be determined.

When doing a cost benefit analysis, cost side has to be compared with outcomes on the benefit side. *I*n epilepsy, the indicator of outcome is reduction in the frequency of seizures and quality of life. But not all outcome indicators are directly cost relevant as 50% decrease in seizure frequency does not produce a 50% reduction of cost.

The cost benefit analysis has recently gained, more importance in epilepsy due to two reasons. First is due to the provision of epilepsy surgery coming up even in developing countries and it is important to know the cost effectiveness of medical management vs surgery in managing epilepsy patients. It is proved beyond

doubt that ATL is a effective Rx for selected patients with medically intractable complex partial temporal lobe seizures. The per patient cost of pre surgical evaluation and surgery has been estimated at $ 25,000- $ 100,000 depending on complexity of cases. ATL completely controls complex partial seizures in 39-61% of ATL patients for $\geq$ 5yrs and complete seizure control improved the quality of life of these patients. Previously seizure frequency was the main outcome of importance after epilepsy surgery, as drugs could be reduced and direct costs reduced. But the quality of life and life participation is equally important in considering the economic aspects. The employment situation and job productivity of patients do not improve to the same degree as the reduction of seizure frequency. Opportunities of employment remained unchanged and so the indirect costs was less reduced compared to direct costs after surgery.

Secondly the need of cost benefit analysis is with regard to the newer antiepileptic drugs which is many times costly than conventional AEDs, if cost effectiveness is considered with regard to reduction is seizure frequency.

The cost benefit analysis is also depend on the society in which it is studied, because the cost of surgery, and costs of newer antiepileptics differs between different countries. The age of the patient and the realistic expectations of what life may offer after surgery is also important. So as a preliminary to the study of costeffectiveness,of medical treatment Vs surgery, we analysed the direct cost of care of patients with complex partial seizures of temporal origin.

REVIEW OF LITERATURE

A natural progression from examination of cost of epilepsy is the economic evaluation of epilepsy management which focuses not only upon the cost side of equation, but also the potential benefits that may result from any aspect of care.

Cost of illness is a broad assessment of economic burden where as economic evaluation of epilepsy management addresses how this burden can possibly be reduced by introduction of better treatment either medication or surgery.

A 1975 study for the commission for the control of epilepsy and its consiquences provided a comprehensive estimate of U.S cost of epilepsy. The cost of direct medical treatment, residential care, vocational rehabilitation, special education and research was estimated at $ 560 million. Indirect cost including excess unemployment, excess mortality was estimated at $ 3 billion, so this study suggested that cost of epilepsy exceeds that of many other neurologic disorders and represented >3% of the total cost of all neurologic brain diseases. However a substantial percentage of direct and indirect cost attributed to epilepsy in the commission study was for residential care and excess mortality of institutionalised persons for whom epilepsy was a secondary diagnosis. Cost of epilepsy was estimated by Hauser & Kurland in 1975. The total cost was 20% of total cost of diseases of the nervous system. According to DHEW report , 15% was direct cost & 85% was indirect cost of epilepsy. From the National Hospital

discharge survey and National Ambulatory care expenditure survey, total hospital cost was estimated at $ 532.4 million and expenditure for physician services at $ 76.7 million. Epilepsy, was least costly of the neurologic disorders accounting for <1% of total cost of all neurologic disorders but ,the direct and indirect cost was not estimated due to insufficient data.

One of the most important aspect of economic burden is the indirect cost of which employment difficulties contribute significantly. A population based study in Rochester, Minesotta showed that persons with epilepsy had twice the unemployment rat of general population and though employed were less likely to be in professional and managerial occupation and are in service and skilled occupation. In those with severe and infrequent seizures, unemployment of 50% was seen.

A study of cost of epilepsy in US by Charles Begley looked into the life time cost of epilepsy for a cohort of persons with epilepsy. Total life time cost in 1990 of all persons with epilepsy was $ 3 billion with indirect cost accounting for 62% of total. Cost per patient ranged from $ 4272 for persons with remission to $ 138,602 .for persons with intractable and frequent seizures. AED is mostly costly of the direct cost of epilepsy. Cost of epilepsy of UK was studied by Cockerell et al. Estimation was based on the results of 2 population based studies .The national epilepsy survey (NES). which consisted of 1628 cases of established epilepsy identified through random national survey of patient with

epilepsy currently taking anti epileptic drugs and National General Practice study of epilepsy (NGPSE) which included 602 patients in which the direct and indirect costs were calculated. The combined direct and indirect costs of established active epilepsy were found to be $ 4167 per patient per annum of which 69% were indirect costs which includes unemployment excess mortality and that of established but inactive epilepsy $ 1630 per patient per annum.

AIMS OF STUDY

To evaluate the direct cost of care of persons with complex partial seizures of temporal origin.

MATERIALS AND METHODS

All the patients attending our clinic in the time period between 1996 - 1998 with complex partial seizures of temporal origin was seen. Patients were classified as having complex partial seizures of temporal origin when the 1) ictal semiology was suggestive 2) EEG showed temporal spikes and or MRI showed hippocampal volume loss. Economic data included the direct medical and nonmedical costs obtained through patient interviews and all the pertinent events leading to resource utilization were recorded and included in the analysis. The direct costs included the cost of antiepileptic drugs, the physician or hospital visits including the transportation and hospitalisations. The cost of AED was taken as that the patient was on in the last 6 months. The diagnostic investigations which included CT, MRI, EEG and VEEG which were one times costs were analysed separately.

RESULTS

Our study included 71 patients with temporal lobe epilepsy which comprised of 46 males and 25 females. The age of the patients ranged from 17 to 45 years (mean ± SD = 27.1 ± 7.6 years). The duration of the epilepsy ranged from 1.6 years to 27 years (mean ± SD = 15.4 ± 6.7 yrs). The duration of treatment with antiepileptic drugs (AED) varied from 1-27 years (mean ± SD = 13.7 ± 6.7 yrs).30 (42%) patients were on monotherapy and 41 (58%) patients were on polytherapy of which 38 patients (53%) were on 2 drugs (5%) on three drugs. EEG was done in all the patients. 20 patients underwent CT and 39 patients had MRI done, of which MRI was abnormal in 20 patients (17 had MTS and 3 has structural lesion). The average expense of AED therapy per month per patient was Rs. 372. Physician consultation, and transportation and hospital expenses resulted in a cost of Rs. 1510/ year per patient so the recurring annual direct cost for care of a person with temporal lobe epilepsy is approximately Rs. 6000.

DISCUSSION

Recently many studies have looked into the cost of epilepsy. All these studies have looked into both the direct and indirect costs of epilepsy, of which indirect costs contributed more to the cost of epilepsy. In our study we assessed the direct cost of patients with temporal lobe epilepsy. Most of patients had long duration of epilepsy (mean duration 15 yrs) and Engel score of seizure was on average>5.This group of patients are unlikely to have a remission of their seizure. Except one patient, who was on gabapentin, all our patients were on conventional AEDs and cost of AED was Rs. 372 per month. Other expenses came to Rs. 1510/year per patient so the yearly direct cost of the care of a patient with epilepsy is approximately is Rs. 6000/-.

The direct costs of epilepsy as per the previous studies ranged from 31% to 38%. So if we include the indirect costs also, the financial burden imposed by epilepsy is very high. In a developing country like ours where the cost of epilepsy surgery is not very high, especially taking into account, the good prognosis of patients after ATL, surgery would be better therapeutic option, for these patients but this needs further analysis including the indirect costs and cost of surgery. We were not able to look into the positive relationship of seizure frequency and costs as the frequency of the seizure was almost similar in most of the patients.

There are many limitations for this study. This cannot be taken as a direct cost of epilepsy patients, in general as we have included only one subset of patients with complex partial seizures of temporal lobe. The major part of the cost of epilepsy which includes the indirect costs of epilepsy is not included in our study.

Since we have taken only the group of patients with Complex Partial Seizures of temporal lobe origin, and mostly with long duration of seizures, the cost can be directly compared with the cost of surgery and cost effectiveness analysed once the indirect cost is also included.

This study may aid in planning future studies for assessing the cost-effectiveness leading to further understanding of the burden of illness of epilepsy.

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