Demographics and Pharmacotherapy in Neurocysticercosis: A hospital Based Study

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INTRODUCTION

Neurocysticercosis (NCC) is one of the commonest preventable cause of seizure. This is caused by ingestion of tapeworm eggs.¹ NCC is due to development of the larval form of Taenia solium. It should be noted that NCC is only acquired by ingestion of eggs (fecal-oral route) and not due to ingestion of cysticerci in undercooked pork which causes intestinal taeniasis.² Though humans are the definitive hosts for Tinea solium, cysticercosis results from human acting as accidental intermediate hosts for the parasite.¹

This disease is endemic in south east Asia including Nepal and has been considered as one of the “neglected tropical disease”³.⁴ It is estimated that 50 million people worldwide has NCC with approximately 50,000 deaths each year relating to NCC. NCC is responsible for more than half cases of late onset epilepsy in developing countries.⁵⁶ The prevalence of NCC in Nepal is 0.002-0.1% in general public. Still existing open defecation, backyard pig raising might be a reason for NCC to be endemic in Nepal.⁷⁸ Studies in Nepal have shown that up to 7.3 per 1,000 population may suffer from epilepsy with about 50% of the cases attributed to NCC.⁹

There is paucity of recent NCC data in Nepal. Knowing the details of outpatient data of NCC patients help to know the disease burden in our context. Also knowing the details of involvement of NCC in seizure cases help to know the course and duration of treatment of it.

METHODS

All the patients who came to Neurosurgical outpatient department (OPD) of Annapurna Neurological Institute and Allied Sciences (ANIAS) with the diagnosis of NCC with seizure during the study time frame were included in the study. The time frame of the study was January 1st 2017 till December 31st 2018. Data on demographic
In terms of number of lesions, 86% of the patients had single lesion while 14% had multiple lesions. In 90.4% imaging modality done was Computed Tomography (CT) which was both plain and enhanced CT. In 9.6% imaging modality was Magnetic Resonance Imaging (MRI). Figure 3 shows typical finding of NCC lesion in CT and MRI respectively.

Figure 3: Typical finding of NCC lesion in CT and MRI respectively.

Percentage of cases in different seizure types. Maximum number of cases had focal seizure with secondary generalization (46%). This was followed by focal seizure (28%).

Figure 4: Percentage of cases in different seizure types

Figure 5 shows percentage of cases in different treatment duration. Most number of cases had more than 2 years of treatment (74.85%) followed by 9 months of treatment (17.36%). In 7.78% of cases there was history or recurrence. Most common antiepileptics was carbamazepine (51.5%) followed by valproic acid (26.3%) and Levetiracetam. In patients who had received carbamazepine, 6% had episode

Figure 5: Percentage of cases in different treatment duration

The study was conducted after obtaining ethical clearance from the institutional review committee.
DISCUSSION

World Health Organization has classified NCC as the most important parasitic neurologic disease. In a study to know the burden of parasitic zoonosis in Nepal, it was found that NCC was associated with highest annual burden. Although prevalence of NCC hasn’t been studied well in our country, studies have found that prevalence of taeniasis in five different districts of Nepal ranged from 11% to 43%. These studies have found that the prevalence was more in the western part of Nepal and risk of cysticerci was more in Banke district. We had more number of patients from the central region of Nepal which might be due to the proximity of hospital in the central region. Study by Heap in 1998 reported that NCC is a common cause of epilepsy in Nepalese soldiers in Hongkong. NCC is a single most common cause of epilepsy in Nepal. In a study done at Bir hospital, Kathmandu, Out of 131 seizure patients admitted, 21 patients were diagnosed with NCC (16%). In the study, mean age of the patients was 33.95 years, with 71.4% male patients and 28.6% female patients. The proportion of male patient was also high compared to female patients in our study too.

In another study done at Dharan, of the 114 in-patient cases of neurocysticercosis, 63% patients were male and 42% were in age group <20 years. Proportion of male patients in this study is very similar to our series.

The commonest Antiepileptic drugs prescribed in our patients were carbamazepine as focal seizure and focal seizure with secondary generalization was the commonest presentation. The duration of treatment was 9 months if the lesion disappeared in the follow up scan in three months period. However in 74.8% of our patient we gave AED for two years which suggested that the lesion did not disappear in the follow up Scan and we tapered AED once the EEG was normal. We had 7.74% of recurrent seizure. It has been stated that presence of calcific residue on the CT scan, occurrence of breakthrough seizures, and occurrence of more than two seizures were associated with a higher risk of recurrence of seizures. The recurrence rate was 15% in this study. We did not prescribe antiparalsite drug (albendazole) therapy in single lesion as there is no need of antiparasite drugs in single lesion and if it is a calified lesion then the cyst is already dead. In terms of number of lesions in a patient, our study found more prevalence of single lesion. Similar finding was also seen in India where as multiple lesion was found in Latin America.

In current study, most common seizure was focal seizure secondary generalized followed by generalized tonic-clonic seizure. In earlier retrospective study of 250 patients at our institute who presented with seizures; it was found that 47.1% of the patients had Generalized Tonic Clonic Seizure. This was followed by focal seizure secondary generalized. NCC is considered an eradicable disease by public health experts if appropriate widespread preventive measures are followed.

CONCLUSION

NCC affects the productive age group with higher proportion being male patient. Single lesion is more prevalent. Proper measures for treatment and prevention of neurocysticercosis is essential and can lead to better control of this condition.
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