Absence of hot water epilepsy among Indian epilepsy patients in Malaysia

Vimalan RAMASUNDRUM, Chong-Tin TAN

Department of Medicine, University Malaya Medical Centre

Abstract

Background and Objective: Hot water epilepsy is a unique form of reflex epilepsy described mainly in South India, with reported prevalence of up to 6.9%. Genetics is thought to be important in the pathogenesis. Malaysia is a multicultural country with 7.7% ethnic Indian population who are mainly descendents of migrants from South India. This study aims to determine the prevalence of hot water epilepsy among the Indian epilepsy population in Malaysia. Methods: Indian epilepsy patients attending the Neurology clinic at University Malaya Medical Centre and Hospital Kuala Lumpur were interviewed with a structured questionnaire. Results: A total of 189 patients were recruited. The mean age was 33.2 years, the mean duration of epilepsy was 14.4 years. The Male: Female ratio was 9:11. A third of the cases were idiopathic and the remaining were remote symptomatic or cryptogenic. The ethnic distribution was: Tamils (72%), Malayalee (11%), Punjabis (5%), Telegus (5%) and Ceylonese (5%). Parental consanguinity was noted in 23% of the respondents. Sixty one percent of the respondents had various seizure precipitants. However, none had their seizures induced by hot water shower or bath. All the respondents were unaware that hot water can induce seizure and 64% regularly took shower or bath using hot water.

Conclusion: This study did not find any case of hot water epilepsy among Malaysian patients largely of South Indian descent. Factors other than race and genetics may determine the prevalence of hot water epilepsy.

INTRODUCTION

Hot water epilepsy is a unique form of reflex epilepsy. The epilepsy is precipitated by the stimulus of bathing with hot water poured over the head. The largest number of hot water epilepsy has been reported from South India. It has been said that in Southern India, it is customary to bath everyday. However, washing of the head is done generally every 3-15 days. During the bath, mugsfuls of hot water is poured from a bucket in quick succession directly over the body or the head. The temperature of the hot water used ranges between 40-50°C. The seizures are of complex partial type with or without secondary generalized tonic-clonic seizures. The seizures induced could occur at the beginning or at the end of the bath. It usually lasted a few minutes. Spontaneous non-reflex epilepsy was reported a few years later in 16-38%. Intercital scalp electroencephalography is usually normal.1,4 The reported prevalence of hot water epilepsy is 3.6% of epilepsy clinic, and 6.9% of a community survey in Bangalore, Karnataka, South India.4,6 A recent report from Turkey estimated a prevalence of hot water epilepsy in 0.6% of patients in epilepsy clinic.7 Hot water epilepsy has also been reported from Japan and elsewhere.8-10 A family history of epilepsy has been reported in 7-25% of the patients.8,9 The pathophysiology of the disease has been attributed to aberrant thermoregulation with rapid rise in body temperature secondary to hot water in the susceptible individuals. The occurrence of febrile seizure in childhood results in "hyperthermic kindling" has also been postulated.8,11,12

Malaysia is a multicultural country consisting mainly of Malays, Chinese and Indians. According to the year 2000 census, the Indians accounts for 7.7% of the 21.9 million Malaysians. The great majority of Malaysian Indians are descendents of immigrants from the Southern Indian states, Tamil Nadu, Kerala and Andra Pradesh, and Sri Lanka. This study aims to estimate the prevalence of hot water epilepsy among the Malaysia Indian epilepsy population in the neurology clinics.
METHODS
Epilepsy patients of Indian origin who attended the neurology clinic in the two largest government hospitals in Kuala Lumpur, the University Malaya Medical Centre and the Kuala Lumpur General Hospital were recruited. The study was conducted from December 2001 to May 2002. The patients or the care givers were interviewed by the author (VR) using a structured questionnaire. The questionnaire contain questions related to demographic features, seizure history, seizure precipitants, awareness of hot water epilepsy, and family history. For statistical analysis, the data was analyzed using SPSS version 3.0.

RESULTS
A total of 189 cases were studied. The mean age of the patients was 33.2 years (range: 2 months to 92 years). The mean duration of epilepsy was 14.4 years (range: 6 months to 53 years). Forty eight percent of the patients were females. Twenty seven percent 27% of the epilepsies were idiopathic, and the remaining were remote symptomatic or cryptogenic. The mean frequency was 10 seizures per year.

The maternal and paternal ethnicity is as listed in Table 1. As shown, 88-90% of the patients were of South Indian states of Tamil Nadu (Tamilians), Kerala (Malayalees), and Andra Pradesh (Telugu).The others were from Punjab (Punjabis) and Sri Lanka (Ceylonese). Parental consanguinuity was seen in 23% of the cases. Of the patients with parental consanguinity, 13% was between cousins, 13% had uncle-niece marriage, 76% were uncertain of the relationship. Family history of epilepsy was seen in 14% of the patients with parental consanguinuity.

Seizure precipitants were seen in 64% of the patients. Of these, 38% had single precipitant, 29% had two precipitants and 19% had three precipitants, and the others 4 or more precipitants. The precipitants were mental stress (32%), tiredness (25%), and lack of sleep (22%), fever (11%), physical stress (9%), “heatiness” (7%), food (6%), menses (6%) and television (4%).

All the patients were unaware of hot water able to induce epilepsy and 64% took hot water bath regularly. None of the patients had hot water epilepsy.

DISCUSSION
According to the year 2000 census, Kuala Lumpur and its neighboring state of Selangor where the two hospitals in this study serves (University Malaya Medical Centre and Kuala Lumpur Hospital) has a combined population of 5.3 millions. There were 0.7 million (13.8%) ethnic Indians. The prevalence of epilepsy is estimated at 0.5% of the general population. As no case of hot water epilepsy was found in the 189 patients surveyed, the prevalence of hot water epilepsy among Indians in Kuala Lumpur and Selangor is 0-1.93% (95% C.I.).

A family history of hot water epilepsy has been reported in 7-15% of Indian probands.2,4 Hot water epilepsy was familial in 18% of cases in an epidemiological study conducted in rural Bangalore, South India. This included one family with all the 7 members having hot water epilepsy.5 The traditionally high incidence of consanguineous marriage in many South Indian families is speculated to the increase in appearance of hot water epilepsy in these population.6 Ethnic Indians in Malaysia are largely of South Indian descents. Consanguineous marriage is common among Malaysian Indians as for Indians in South India. When systemically surveyed, none of the Malaysian Indian epilepsy patients had hot water epilepsy. No case of hot water epilepsy has been previously reported anywhere in Malaysia. This study suggests that factors other than genetics may be important in the pathogenesis of hot water epilepsy.

None of the Malaysian Indian patient had the concept that hot water bath can precipitate seizures. On the other hand, “heatiness” as a cause of illness, including seizures, is common among all the three major races in Malaysia (Malays, Chinese, Indians).11 Seven percent of the person with epilepsy in this study attributed their seizure precipitants to “heatiness”. This

<table>
<thead>
<tr>
<th>Maternal ethnicity</th>
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<tbody>
<tr>
<td>Tamilian</td>
<td>72%</td>
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<tr>
<td>Malayalees</td>
<td>11%</td>
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<tr>
<td>Telegus</td>
<td>7%</td>
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<tr>
<td>Ceylonese</td>
<td>5%</td>
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<tr>
<td>Punjabis</td>
<td>4%</td>
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<tr>
<td>others</td>
<td>1%</td>
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<td>Total</td>
<td>100</td>
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99
shows that the cultural concept of illness is important in the attributed precipitants of seizures. The absence of the concept of hot water epilepsy in the Malaysian Indian population may be an important factor in the seizure among the Malaysian Indian population.

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