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Community-based epidemiological study of epilepsy in the Qena governorate in Upper Egypt, a door-to-door survey

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Summary
Background: The aim of this study is to estimate the epidemiological features of epilepsy in a representative governorate of Upper Egypt.
Materials and methods: A door-to-door community-based survey study was performed using a sample of 10 areas among various districts of the Qena governorate in Upper Egypt. Six were classified as rural areas, and the remaining four were classified as urban areas, with a total population of 8027 inhabitants. The population was screened using an epilepsy-screening questionnaire. Positive cases with suspected epilepsy were referred to Qena University Hospital to be further evaluated by a qualified neurologist and for further investigations, such as neuroimaging and electroencephalography.
Results: One hundred patients had a confirmed diagnosis of epilepsy, with a lifetime prevalence of 12.46/1000. The active prevalence rate of epilepsy was 2.12/1000, while the incidence rate was 123/100000. Seventy-six percent of the patients had idiopathic epilepsies, while 24% had symptomatic epilepsy. Generalized epilepsies were more common (70.1%) than partial epilepsy (26.3%), meanwhile epilepsies with mixed seizure types were 2.6%. The most common seizure type was generalized tonic clonic seizures (51.8%). The age-specific prevalence rate of epilepsy was much higher in infancy and early childhood (62.5 and 37.04/1000, respectively), which regressed steadily with age. Idiopathic epilepsies were significantly more common in urban areas than in rural areas ($P = 0.01$), while symptomatic epilepsies were more common in rural areas than in urban areas ($P < 0.005$).

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Conclusion: Upper Egypt is characterized by a relatively high incidence and prevalence of epilepsy and epilepsy-related medical service, and more cultural education should be directed to those areas in Egypt.

Introduction

Epilepsy is considered one of the oldest conditions known to mankind and is still the most common neurological disorder affecting all age groups, as it is estimated that up to 70 million patients worldwide have a diagnosis of epilepsy at a given time. The WHO estimates that 8 persons/1000 worldwide have a diagnosis of epilepsy (Banerjee et al., 2009; El-Tallawy et al., 2013; Farghaly et al., 2013; Ngugi et al., 2010). The reported incidence, prevalence, and burden of the disease worldwide showed many disparities in the reported studies (Banerjee et al., 2009). The prevalence of epilepsy is higher in developing countries compared to developed countries (Perucca et al., 2001; Preux and Druet-Cabanac, 2005). It is estimated that 90% of patients with epilepsy live in developing countries in Africa, Asia, and Latin America (Houinato et al., 2013). At the clinical level, epilepsy is similar in developing and developed countries, but the extent to which patients with epilepsy are recognized, investigated, and managed is different. Epidemiology, aetiology, socio-cultural, and economic factors all contribute to these differences (Bharucha, 2003).

Epilepsy does not distinguish between geographic, racial, or social boundaries; however, the aetiology of seizures is multi-factorial in any given individual and is best thought of as an interaction between the genetically determined seizure threshold, underlying predisposing pathologies or metabolic abnormalities, and acute precipitating factors (Guberman, 1999).

Epidemiologic studies are necessary to define the health burden of epilepsy; to establish public health and health care priorities; to identify education and service needs; to provide information needed for prevention, early detection, and treatment; and finally to promote effective health care and support programmes for people with epilepsy (Thurman et al., 2011). In developed countries, researchers easily find epidemiology-related information due to the availability of universal health care systems, routine medical registration, and medical records in various database systems. However, in developing countries the availability of health care systems and medical registration is still lagging. Accordingly door-to-door personal interviews are the main source of data needed for epidemiological studies (El-Tallawy et al., 2013).

We conducted this community-based door-to-door study to assess the main epidemiological parameters of epilepsy in the Qena governorate as a representative of Upper Egypt.

Subjects and methods

This study was a part of a cross-sectional community-based epidemiology programme for neurological diseases (namely stroke and epilepsy) implemented in the south Upper Egypt, Qena governorate. The study protocol was approved by the local ethics committee of Qena University.

Study area

The Qena governorate is characterized as the narrowest part of the Nile river valley. It forms a green land strip of only 1—2 km on either sides of the river, bordered by the west and east deserts on both sides. The total surface area of the Qena governorate is estimated to be 10,798 km^2, which represents approximately 1.1% of Egypt's total surface area. Qena has an estimated population of approximately 3 million people according to the national Egyptian census, 21.4% of them live in urban areas and 78.6% in rural areas. The Qena governorate consists of 2 cities and 11 districts. Qena and Nag Hammadi are considered as urban areas. Qena city is the capital of Qena governorate. It is situated on the east bank of the Nile. It is most famous for its proximity to the ruins of Dendera. The population is 230,392. Nag Hammadi is located on the west bank of the Nile in the Qena governorate. It is an industrial city that produces sugar and aluminium. It has a population of approximately 30,000. The 11 districts are considered rural areas, which are distributed around the Nile and where most of the people are farmers.

Study timing

The study was conducted over a 2-year period from September 1, 2011 to August 31, 2013. August 31, 2013 was considered the prevalence day. Thus, any positive subject fulfilling the diagnostic criteria of epilepsy before the prevalence day at any time of their lives was considered as a prevalent case, and any subject who gave a history suggestive of epilepsy that began during the survey period was considered an incident case of epilepsy.

Sampling methodology

First stage: selection of the study sites

A random sample of 10 study areas was selected randomly from the Qena governorate. First, we randomly selected 3 of the 11 districts according to their geographic location. Then, we selected two villages (areas) from each district, including Nagada (in the west bank of Nile), Qift (in the east of Nile), and Dishenna (in the north bank of the Nile), with a total of six villages considered as rural populations. Second, we randomly selected two areas each from Qena and Nagh Hammadi for a total of four urban areas according to local security safety.

Second stage

An initial diagnosis was based on a screening questionnaire (discussed next). The survey team comprised 10 social workers (education level of at least 10 years) who used the screening questionnaire, two neurologists, and a psychiatrist (master's degree with at least 5 years of experience).