Parkinson’s Disease in the Gulf Countries: An Updated Review

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Introduction

The Arabian Gulf countries, or simply the Gulf countries, are 6 countries that make up most of the Arabian Peninsula: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates. Also known as countries of the Gulf Cooperation Council (GCC; [1]), they comprise a rapidly developing part of the world, with an estimated collective population of just under 49 million [2]. They share socioeconomic qualities, religious beliefs and demographic characteristics. With the help of globalization and oil discovery, there has been a relatively recent surge in these countries’ incomes, making them some of the wealthiest countries in the world (average gross national income per capita of $68,792 in 2012 [2]). For the most part, this has led to improvements in lifestyle overall, specifically in health care [3]. For example, the average life expectancy has increased from 71.2 years in 1990 to 76.2 years in 2012 [4]. Unlike the political unrest in some of the neighboring countries since the ‘2011 Arab Spring’, the situation in the GCC countries remains largely stable.

Parkinson’s disease (PD) is the second most common neurodegenerative disorder in the elderly, and the most commonly seen movement disorder in neurology clinics [5]. Likely due to methodological and sociodemographic differences and time since publication, reported prevalence rates of PD vary widely in the published literature. For example, PD prevalence was reported to be as low as 18 per 100,000 in a Chinese population [6] and as high as...
65–125 per 100,000 among the Europeans [7]. A study from England in 1992 revealed a prevalence of 121 per 100,000 [8]. It is expected that PD incidence will further increase in the future, as there are far more people surviving beyond 65 years of age than in the past [9]. With the improved life expectancy in countries of the GCC, PD in the area is likely to mirror the increase observed elsewhere. This article aims to review data about PD in GCC countries (see table 1 for a summary).

### Genetic Studies

Arab families generally tend to be large units with a high rate of consanguineous marriages (up to 30% of all marriages in some populations [10]), thereby increasing the risk of genetic and familial disorders. Familial PD accounts for less than 10% of all cases of PD [11]. More than 13 loci and nine genes have been implicated in causing familial PD. With such a high rate of inter-marriages and several candidate genetic defects causing PD, one would expect a much higher rate of familial PD in these populations. However, only 2 reports (parkin and PINK1 defects) have been published from GCC countries, suggesting that more research on potential genetic causes of PD in the region should be undertaken.

Only a handful of studies have specifically investigated the prevalence of PD in Arabs who mostly have their origin in North African Arab countries. A genetic study of familial PD in Tunisia [12] identified autosomal dominant with incomplete penetrance and autosomal recessive modes of inheritance. It is striking that...
causes of familial PD, such as LRRK2 G2019S, which are very prevalent in North African Arabs, have not been reported from GCC Arabs [13, 14]. This could be attributed to the ancestral differences between GCC Arabs and North African Arabs, the latter community being much more closely associated with Berber ancestry [13]. The absence of LRRK2 G2019S mutations in the Saudi population studied by Al-Mubarak et al. [15] further demonstrates the genetic distinction between GCC Arabs and North African Arabs. These findings, however, do not prove the specificity of LRRK2 G2019S mutations to North African Arabs, and are a reminder of the need for further exploration of the role of the genetics of PD in the GCC.

Epidemiological and Clinical Studies

It is surprising that a solitary epidemiological study on neurological disorders in such a populated region has been published [16]. Of the few clinical studies, a number of knowledge deficiencies still exist. For example, not one study has stratified PD patients according to their cognitive state upon presentation/screening. The association of PD and cognitive decline may be of particular relevance to Arab patients, given that North African carriers of LRRK2 G2019S mutations were found to have higher rates of depression, hallucination and sleep disorders [17].

While crude prevalence rates of idiopathic PD in Arab countries are reported to be similar to the value of 27 per 100,000 in Saudi Arabia [16] in some studies, others have reported considerably different rates. One study conducted in 3 tertiary referral centers in Irbid, Jordan, reported prevalence of 37.4 per 100,000 [18]; a second 1986 population Libyan study reported a prevalence rate of 31.4 per 100,000 [19]; and a third Tunisian study reported a crude prevalence of 43 per 100,000 [20]. In contrast, distinction, Khedr et al. [21] found a PD prevalence of 557.4 per 100,000 in a recent cross-sectional survey of the Egyptian district of Assiut, a rate much higher than the rate previously observed in the Arab world. The authors of that study highlighted that their study population was rural, possibly explaining this difference, with the majority of other studies comprising urban populations [18, 19, 21].

Conclusion

Future interventions should focus on uniting efforts in the region, and conducting well-designed incidence and prevalence studies, as well as genetic analyses (e.g. identifying LRRK2 G2019S mutation in GCC Arabs). The GCC countries are considered among the richer countries, which should make conducting nation-wide or even international studies logistically easier than it is in many other countries within the region. Such multinational research can be organized by the existing GCC, or through a collaboration of the Ministries of Health. This would, hopefully, culminate in the training of Arab movement disorders researchers and the introduction of more specialized research centers, as well as the implementation of better health care policies and practices for the aging community.

Disclosure Statement

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References


