

Innovative research on Parkinson's disease and movement disorders

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Advances in research on Parkinson's disease (PD) in recent years have led to better understanding of the clinico-pathological aspects of the disease leading to the discoveries of promising therapeutics. The disease itself is currently viewed as a multisystem disorder affecting not only the motor system and the dopamine and has a long period of preclinical symptoms. Although the exact mechanism leading to cell death is unclear, many lines of evidence have supported gene and environment interaction as a potential culprit. Chulalongkorn Center of Excellence on Parkinson's disease and Related Disorders has initiated its research program since its formal establishment in 2006 with a national PD registry in collaboration with the Ministry of Public Health (MoPH), Bangkok Metropolitan, and the National Security Health Office to determine the prevalence and possible risk factors of PD in Thailand. While registry data supports pesticide exposure as the potential risk factor of PD in Thailand, our epidemiological survey of PD on retired Thai traditional boxers has also identified the number of professional bouts as a possible risk. Very likely, the risk factors of PD are more than one with different susceptibility occurring in each individual. In responding to the increased awareness of PD in Thailand, the Thai PD society together with the Neurological Society of Thailand has published the diagnostic and treatment guideline of PD in 2012 and implements its use through different channels of the MoPH and the Thai Red Cross society. While therapeutic options in PD has expanded significantly in the last 10 years, our recent data still highlights significant knowledge gaps in PD among medical professionals and much still needs to be done to increase awareness/knowledge of PD and its related disorders among physicians, patients, and caregivers.

Diagnostic challenges are still a significant problem among physicians in Thailand who frequently encounter a large number of patients with tremor and are unclear if this tremor is Parkinsonian in nature. As the diagnosis of PD is still clinical, the accuracy of the diagnosis very much depends on the skills and experiences of the diagnostician together with patients' response to dopaminergic medications. While a number of investigations have been proposed to increase the diagnostic yield of PD,

their availability and cost is still a major issue in Thailand. Recently, our research team in collaboration with NECTEC has developed a low-cost, inertial sensor that is capable of evaluating tremor in a real clinical practice and the pilot data has yielded promising results with a plan to large-scale clinical studies. The ability to develop small ambulatory monitoring devices has led us to implement similar technologies to capture falls and nocturnal movement in the home environment of the patients with a hope that we will be able to perform early detection of these problems. For example, our recent data suggests that gait dysfunction occurs in all stages of PD even in the early stage when patients do not have any complaints of gait or balance. It will be good for patients if we are able to capture patients with subclinical gait dysfunction for early intervention to prevent falls.

The evidence is now clear that better treatment in PD has improved patients' life expectancy and related quality of life of not only patients but also their caregivers and families. Moreover, the holistic approach of PD is essential requiring multidisciplinary care from various disciplines. Since PD is an ageing related disorder, it is likely that the number of affected individuals in Thailand will increase as the rest of the world. This finding has emphasized the fact that not a single center is capable of delivering comprehensive PD care for the whole nation but at least the above examples are initiatives that we have developed. The important step is to expand the network of PD communities in Thailand to involve all parties, not limited to treating physicians but also other medical professions, researchers, and even patients and caregivers themselves.