Editorial for focused issue "Neurological Diseases"

In this special issue of *Annals of Translational Medicine*, experienced physicians and academic researchers contribute their original works in the field of neurological diseases. The burden of neurological diseases is one of the leading causes of disability and death globally and continues to increase. Luckily, the knowledges of this field continue to update with advances in technology at the meantime. Neurology is becoming a rapidly developing field and we need to rethink and redefine some traditional concepts in this new environment.

The broad diversities of neurological diseases make it difficult to classify in details. For practical purpose in this issue, they are roughly divided into common and uncommon neurological diseases. The diagnosis for common neurological diseases is usually not a big challenge in routine clinical practice. However, the high prevalence and paucity of effective prevention and treatment strategies often lead to huge economic burden for society. New discoveries from basic experiments by studying underlying mechanisms of diseases or effective molecule pathways of new drugs as well as from clinical researches by summarizing the objective laws or testing new therapeutic methods pay the way for better managements. For instance, the neuroprotective effect of a new extract from plant in intracranial hemorrhage mice may be promising for further clinical research. Exploring associations between stroke outcomes and specific characteristics such as eGFR, neurological deterioration is useful for risk stratification and further prevention. The SEEG-guided radiofrequency thermocoagulation could be another treatment choice other than drugs for epilepsy. Moreover, uncommon presentations or therapies from case reports could also provide new insights into common neurological diseases.

The application of gene testing unveils many uncommon neurological diseases. Combing the genotypes with phenotypes in these uncommon diseases is critical for diagnosis and further understandings of fundamental roles of those genes such as Arg332Cys mutation in *NOTCH3* gene for cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL), SACS mutations for complicated paroxysmal kinesigenic dyskinesia, synergistic effect of CSF1R and NMUR2 for symptom of binge eating in hereditary diffuse leukoencephalopathy with spheroids. What's more, the identification of pathogenic genes offers the possibility to cure the diseases that are ever thought incurable. In recent years, breakthroughs of gene therapy for certain diseases could be robust examples of transition from scientific knowledge to medical process.

In addition, the advances of neuroimaging provide valuable information and facilitate better diagnosis and treatments of neurological diseases. The usage of high-resolution magnetic resonance allows to *in vivo* evaluate wall and lumen lesions of intracranial arteries in acute ischemic stroke patients with intracranial atherosclerosis, which is helpful for exploring pathophysiological mechanisms of stroke, differentiating the vulnerable plaques and establishing a prediction model for poor outcomes. The invasive measurement of ultrasonographic optic nerve sheath diameter has shown its potentials in monitoring elevated intracranial pressure, which is reliable and convenient for routine practical use.

Finally, one important advantage of this special issue I want to mention is the large sample size of clinical researches in common neurological diseases, such as nearly 1,000 in the study of analysis of young stroke patients in the northeast of China. Meanwhile, the number of cases in some articles of uncommon neurological diseases are also relatively large compared with other similar studies. The abundant resources of patients in China bring precious opportunities for systematically studying common neurological diseases and more chances of observing unusual and interesting phenomenon. At the same time, we welcome more international academic collaborations for studying neurological diseases on this platform. However, one thing for every researcher should keep in mind is that a large sample size is an important but not the only factor for high-quality studies. A scientific process including study design, data collection, analysis and interpretation is of great significance and necessity. The results from a study with a large sample size but inaccurate design or analysis will only be unconvincing and misleading.

In conclusion, we hope our readers of this collection of articles, reviews and case report will be able to gain a new inspiration of the field they are interested in, an appreciation of those new and exciting discoveries, and a better understanding of the challenges of neurological diseases. As guest editors, we would like to express our gratitude to colleagues and leaders who have generously contributed to this special issue, and to patients and their families for their participation in those clinical researches.

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Footnote

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