The relevance of developmental neurotoxicity research in Malaysia

ABSTRACT

The developing brain is found greatly vulnerable towards the exposure of different environmental chemicals/drugs, even at concentrations, that are normally considered harmless in the mature brain. The developing central nervous system (CNS) is a ówork under progressô system, constantly undergoing remodeling, where active proliferation, differentiation, migration, synaptogenesis, and circuitry establishment take place within a tightly controlled time frame. An accumulating body of evidence pointing to links between toxic chemicals, including food contaminants with different neuropsychiatric and neurological disorders such as autism, dyslexia, attention deficit hyperactive disorder, cerebral palsy, schizophrenia, Parkinsonôs disease, Alzheimerôs disease and IQ deficits. The impact of childrenôs IQ deficits is sometimes dismissed as unimportant because the magnitude of the impairments is considered to be clinically insignificant. Noteworthy, total economic loss in Asia in 2011 due to childhood Lead exposure was estimated around RM 26 trillion. This represents a very substantial value to the society where the largest burden of lead exposure is now borne by low- and middle-income countries. Thus, testing of compounds for neurotoxicity has become increasingly important in recent years. In Malaysia, developmental neurotoxicity research is a new field. To date, a large body of evidence showing that our environment and food was contaminated with pollutants. Also, the number of neurodevelopmental disorders and IQ deficits are keep on increasing. Taken together, we already have adequate reasons to start research works related to the developmental neurotoxicity research in Malaysia. However, the effort should be orchestrated together with researchers from different fields with a proper planning and research agendas to guarantee an achievable final goal, protecting our future generation from the ósilent damageô of those toxic chemicals. Developmental neurotoxicity research pivotal for formulating effective guidelines and strategies to limit the exposure to hazardous chemicals, especially towards the developing nervous system.

Keyword: Developmental neurotoxicity; Malaysia