Neuroinformatics: A tool for assessment of complex neurological disease.

Viroj Wiwanitkit*

Department of Medicine, Hainan Medical University, PR China

Accepted on 23 July, 2017

Editorial

The advanced bioinformatics technologies are accepted for usefulness in medicine and public health. It can be useful for diagnosis, treatment and prevention of disease. The neuroinformatics is a specific subject of bioinformatics dealing with omics technology for neurology. Several new software and computation tools are developed for serving as databases as well as simulation tools in neuroinformatics [1]. The good example of network in neuroinformatics is CATI, "a platform dedicated to multicenter neuroimaging" which was initiated by the French Alzheimer's plan [2].

Applications of those tools in neurological disorders aiming at clarification of pathophysiology as well as predict for new biomarkers and therapeutic alternatives are the exact usefulness of neuroinformatics. The good example of applied neuroinformatics for biomarker finding is the recent report by Lam et al. [3]. In that work, Lam et al. reported discovering biomarkers for antidepressant response based on the protocol from the Canadian biomarker integration network in depression (CAN-BIND) [3]. Another report is by Presotto et al. [4]. Presotto et al. reported the validation of 18F-FDG-PET single-subject optimized SPM procedure with different PET scanners [4]. Last, the report by Liu et al. is also an important referencing publication [5]. Liu et al. reported the identifying informative imaging biomarkers via tree structured sparse learning for AD diagnosis [5]. Lowe concluded that "the realization of biosensor technologies, point-of-care testing, and the fusion of clinical biomarker data, electroencephalogram, and MRI data with the patient's past medical history, biopatterns, and prognosis may create personalized bioprofiles or fingerprints for brain disorders" and "the application of mobile communications technology and grid computing to support data, computation and knowledge-based tasks will assist disease prediction, diagnosis, prognosis, and compliance monitoring" [6].

For new drug search by neuroinformatics, the usefulness can be seen in many interesting publications. For example, Shaikh et al. reported on prediction of anti-diabetic drugs as dual inhibitors against acetylcholinesterase and beta-secretase [7]. Baig et al. reported on the molecular interaction of Cisplatin with acetylcholinesterase that might be an explanation for neurotoxicity [8].

As noted by Falcon et al. neuroinformatics "can provide the means to create a collection of disease-specific models that can be applied on the individual level to personalize therapeutic interventions" [9]. The specific journal on neuroinformatics can be useful media among medical scientists who plays roles in promoting emerging neuroinformatics and is the exact platform that promise the future advantages in neurology.

References

1. De Schutter E, Ascoli GA, Kennedy DN. (2009). Review of papers describing Neuroinformatics software. Neuroinformatics. 2009;7(4):211.
2. Operto G, Chupin M, Batrancourt B, et al. CATI: A Large Distributed Infrastructure for the Neuroimaging of Cohorts. Neuroinformatics. 2016;14(3):253-64.
3. Lam RW, Milev R, Rotzinger S, et al. Discovering biomarkers for antidepressant response: protocol from the Canadian biomarker integration network in depression (CAN-BIND) and clinical characteristics of the first patient cohort. BMC Psychiatry. 2016;16(1):105.
4. Presotto L, Ballarini T, Caminiti SP, et al. Validation of 18F–FDG-PET Single-Subject Optimized SPM Procedure with Different PET Scanners. Neuroinformatics. 2017;15(2):151-63.
5. Liu M, Zhang D, Shen D. Alzheimer's Disease Neuroimaging Initiative. Identifying informative imaging biomarkers via tree structured sparse learning for AD diagnosis. Neuroinformatics. 2014;12(3):381-94.
6. Lowe CR. The future: Biomarkers, biosensors, neuroinformatics, and e-neuropsychiatry. International Review of Neurobiology. 2011;101:375-400.
7. Shaikh S, Danish Rizvi SM, Suhail T, et al. Prediction of Anti-Diabetic Drugs as Dual Inhibitors against Acetylcholinesterase and Beta-Secretase. CNS and Neurological Disorders-Drug Targets. 2016;15(10): 1216-21.
8. Hassan Baig M, Danish Rizvi SM, Shakil S, et al. A neuroinformatics study describing molecular interaction of Cisplatin with Acetylcholinesterase: a plausible cause for anticancer drug induced neurotoxicity. CNS and Neurological Disorders-Drug Targets. 2014:13(2):265-70.
9. Falcon MI, Jirsa V, Solodkin A. A new neuroinformatics approach to personalized medicine in neurology: the Virtual Brain. Current Opinion in Neurology. 2016;29(4):429-36.

***Correspondence to:**

Viroj Wiwanitkit

Hainan Medical University

PR China

Tel: +86 898 6689 3610

E-mail: wviroj@yahoo.com