

From the fundamental research to the clinical applications in psychiatry

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Today it is considered that psychiatry has evolved from the „fuzzy discussions” stage to the new era of the „biological psychiatry”, which is mainly characterized by an increased interest in establishing new biomarkers for the psychiatric disorders.

This could be, in fact, the main role for the basic or fundamental research in the very complex field of psychiatry. In this way, as known, there are increased efforts now in the field of basic research for giving valuable biomarkers for the clinicians to work with. These biomarkers should have some fundamental characteristics such as increased specificity, reliability and objectivity. There are also talks now about further testing from saliva, urine or tears that are being perfected every year in order to reduce the invasive character of the analysis in the main psychiatric disorders.

In this way, lately, there is an increased attention directed towards the relevance of the main inflammatory and oxidative stress markers in almost all the neuropsychiatric diseases such as Alzheimer’s disease, Parkinson’s disease, schizophrenia, depression, anxiety and even autism. In fact, the latest results are confirming oxidative stress as a key component in the psychiatric pathophysiology and starting from here,

there is a plenitude of discussions and controversies regarding the possibilities for some antioxidants prophylactic or additional treatment schemes.

In this context, we could also mention the so-called „translational research”, which is gaining a lot of attention lately and is mainly represented by a very fast transition from the basic science to its practical applications in the clinical work and general human health. In this way, in the last 20 years, there were developments for a variety of animal models for all the psychiatric disorders that were used for all kinds of pharmacological and behavioural testing. It is important to mention that although these mental disorders are specifically human pathologies and therefore are impossible to be perfectly replicated in animals, the use of experimental animals is mainly based on the physiological and anatomical similarities between humans and animals (such as the rat or mouse) and on the fact that 99 % of human and murine genomes are shared (especially in the case of the genetic models). For example, the pathological conditions in animals can be assessed by manipulating the metabolism of various neurotransmitters, through various be-



havioural tests and also by determining some parameters that can serve as important markers of these disorders: Alzheimer's disease (by administering scopolamine-a muscarinic blocker or Beta amyloid), Parkinson's disease (through the administration of 6-OHDA or MPTP, which are dopaminergic toxins), schizophrenia (generated by the administration of some glutamate blockers, as it is methionine or some anaesthetics, such as phencyclidine or ketamine), anxiety and depression (through behavioural and various neurotransmitters manipulations) or autism (by the perinatal administration of increased dosage of valproic acid).

Moreover, another important aspect which is covered by the fundamental research in the psychiatric field is represented by the study of the associative models and correlative work by using biostatistics, especially when it comes to the relevance of the biomarkers that are also extremely important considering the extensive heterogeneity and the well-known overlapping

between the aforementioned disorders. A good example in this direction can be represented by so called „patterns finding strategy”, that was also demonstrated by our research groups from „Alexandru Ioan Cuza” University and „Socola” Hospital, which showed a progressive increase in the oxidative stress levels in the mild cognitive impairment and then on Alzheimer's disease patients or patients with depressive episode, recurrent depression, schizophrenia and alcoholism (aspects that have been demonstrated also by research groups within „Alexandru Ioan Cuza” University and „Socola” Psychiatric Hospital of Iași).

In this way, although controversial, the importance of the biological psychiatry, as an important aspect of the fundamental research in this complex area of study, is gaining increased importance and could represent the future of this area of medicine, although until now not a single and reliable biomarker was demonstrated for at least one psychiatric disorder.

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