Mental Illness Arises Epigenetically – Like All other Diseases

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Abstract: It is urgent to formulate a more comprehensive synthesis regarding the pathophysiology of mental diseases in light of more contemporary evidences and theories stemming from cellular, molecular biology and evolution theory. The field of epigenetics has arisen as one of the most important scientific axis to understand development, physiology and pathophysiology in all areas of medicine with special impact in psychiatry a field that has been historically dominated by today obsolete biological models and theories. In this short review I try to reflect upon the impacts these new understandings about nature may help us to approach and treat psychic diseases.

Keywords: Epigenetics, biology, psychiatry, explanation, culture, nature, psychopathology, history, genetics, debate, controversy.

1. INTRODUCTION

"It has become obvious to most active geneticists that the good old days of mapping genes are over. From now on, it seems to me, there must be a phase of integration where the various isolated phenomenon are drawn together and where the biochemical, histochemical, chromosomal, cytological, developmental etc. phases are more clearly integrated. My material may help in making this revaluation"

Barbara McClintock, 1950 (Nobel Prize Winner 1983)[1], in a personal letter to Marcus Rhoades[1]

A new post-genomic era has started in biology after the completion of Human Genome Project as predicted by the American geneticist Barbara McClintock with more than 50 years in advance [1]. We thought that once we mapped all genes of our human specie, we would decipher the main mechanisms of the diseases that afflict us. Now, 15 years after the completion, we clearly understood that the question is far more complicated than the *common sense* reductionist genetic determinism that mysteriously still rules biology and medicine. Ironically, because of this genome map we could verify experimentally that Genes are connected to a lot more other cellular and molecular mechanisms besides the known genetic ones. Waddington (1942) described it as *epigenetic* mechanisms *(above, epi in greek)* [2].

This is an old question in human thinking. What is the cause of diseases? Internal causes? External causes? Is the environment important? Or inheritance is the most important factor? These are deep questions because they ask what we understand about the world and the processes that generate health and disease. Scientific models of care that are offered to the world population through public policies are based on the answers to those questions [3].

In the human genome project we shot what we saw, and got what we didn't see. Several evidences were brought into light showing that every genetic process is integrated into other molecular and cellular processes, genes connected to proteins forming networks that pervade cells, tissues and fluids of the organism. Including our immense community of resident bacteria (95% of the total of our organism's cells are bacteria), our diet, our affective relations, our bodies, families, communities, cities, countries, political destinies, cultural practices that are configured moment to moment historically. This vision in biology is named Epigenetics. It is an extremely important theoretical and practical field that should be receiving full attention in our public health offices, in medical and scientific education, as well as in our biomedical research and development programs [4].

The epigenetic view offers a useful and efficient way to explain health and disease emphasizing interactions between organism and environment, showing how our actions, our culture and body biology are deeply connected. This would revolutionize and reinforce whole fields of medicine where therapies are excessively pharmaceutical (molecular), mechanic and deterministic [4].

For example mental illness that afflict a large part of our population that rely only in psychotropic drugs has produced in population level a rising epidemic of mental diseases and never seen profits records of

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pharmaceutical industry [5]. In hegemonic biological paradigm, diseases would be result from specific reducible cause, such as gene defects, or fails in neuron's elements like the neurotransmitter dopamine or its receptor. They used to say that once we have obtained the map of our genetic unities, we could avoid diseases substituting these unities by healthy ones through genetic engineering. Following the same intellectual framework we use specific chemical substances to correct structural molecular problems like abnormalities in Calcium Channels that cross cellular membranes, controlling the flow of atoms charged electrically to the interior or exterior of cells, realizing molecular movements that ultimately move our bodies and perform our biological functions. In accordance with this paradigm, it is very likely that the psychiatric patient inherited from his own family genetic and structural aberrations that must be corrected with drugs acting upon these molecular defects and, eventually, with electroshocks that will improve bioelectrical activity of the patient's brain [6].

However, the epigenetics field precisely showed that biological destiny is not determined. On the contrary, the importance of experience and historical course is immense. And those severe diseases carry hard histories of misery, which leave marks in the biological body through out different generations, accumulating epigenetic alterations [7], until forming very severe clinical forms invariably linked to poverty and misery like those we can observe in our old Psychiatric Hospitals [8]. This has been named "Social Epigenetics" in recent literature [7].

The good new is that the positive experience developed inside such adverse environments like Hospices can be brought to public attention due to contemporary biology oriented by concepts such as epigenetics. This understanding illuminates the role of human culture and experience in the epigenetic occurrence of mental disease, and how symbolic, cultural and political modifications are capable of changing significantly the clinical evolution of even the most severe cases. Experiences of famous psychiatrists such as Nise da Silveira [9] in Brazil, Franco Basaglia [10] in Italy, Ronald Laing [11] in England, our living contemporaries Jacques Arpin [12] in Switzerland and Laurence Kirmayer [6] in Canada, and many others are in line with the epigenetic paradigm of biology reminding us the that only constancy is changing and, at last, man is the destiny of man. Diseases are cultural and political productions simultaneously expressed through epigenetic historical alterations that mould our bodies. Besides that, accumulated scientific evidence demonstrates that we are capable of positively modifying even the most severe chronic psychosis through modifications in space, culture and political relations esthetical and ethical relations. It is urgent that this debate be publicly raised because it means what we do understand about ourselves and how we treat our patients and the oppression processes that caused ill conditions. We are in fact debating democracy in the epigenetics era. An urgent, necessary and possible shift of perspective that integrates the permanent movement of living world, of biology that will certainly adequate us to nature and healthy living.

REFERENCES

[1] Comfort N. The Tangled Field. Barbara McClintock's Search for the Patterns of Genetic Control. Harvard University Press 2003. Boston, USA

[2] Waddington CH. The Epigenotype. Endeavour 1942;18-20

[3] Jablonka E. Evolution in Four Dimensions. MIT Press 2005. Boston, USA.

[4] Pordeus V. Immunology, Science and Public Health: the lost link. Israel Medical Association Journal. Oct 2013.

[5] Gilbert S and Apel D. Ecological Developmental Biology: Integrating Epigenetics, Evolution and Medicine. Sinauer 2008. New York, USA.

[6] Angell M. Epidemics of Mental Illness: why? New York Review of Books 2001.

[7] Kirmayer L. What kind of science for psychiatry? Frontiers in Human Neuroscience 2014. http://dx.doi.org/10.3389/fnhum.2014.00435

[8] Loi M and Stupcka E. Social Epigenetics and Equality of Opportunity. Public Health Ethics 2013; 6:142-3. http://dx.doi.org/10.1093/phe/pht019

[9] World Health Organization. Social Determinants of Mental Health 2014.

[10] Silveira N. The World of Images. O Mundo das Imagens. Editora Ática 1992.

[11] Basaglia F. The denied institution [A instituição negada] Editora Graal 1985.

[12] Laing RD. The divided self: an existential study on sanity and madness. Penguin 1968. London UK.

[13] Arpin J. Masters of their conditions II: intercultural theatre, narration and stage work with patients and healers. Transcult Psychiatry 2008; 45(3): 355-78. http://dx.doi.org/10.1177/1363461508094671

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