

CHANNELOPATHIES

It would be difficult for me to list or name all the books and articles that have been pivotal in my understanding of mental health issues, brain biology, and psychotropic medications. I mentioned a couple of books in a previous column and to those I must add a book simply entitled, Lithium: Actions and Mechanisms by Dr. R. S. El-Mallakh (1996). In this book, Dr. El-Mallakh explains a view of bipolar disorder from the standpoint of the sodium-potassium ATPase pump, a mechanism that many of us studied and forgot in those basic science courses years ago. I would have to say that as I read and studied his argument, a paradigm shift occurred in me. While I probably do the author an injustice by reducing his theory to a sentence, I will attempt to do so. Dr. El-Mallakh stated that a malfunction of this mechanism reduced the exit of sodium from the neuron thus never allowing a full depolarization. I will not repeat his theory in any more detail here, but I have in other writings and lectures.

As well as I remember, Dr. El-Mallakh never used the term channelopathy but he could have, in my opinion. Since that time I have become familiar with the term and have read articles that use the term to describe cell malfunction at one of its most basic levels. i.e., the ion channels that ions (e.g. Na⁺, K⁺, and Cl⁻) go through to enter and leave the cell do not function properly. Channelopathies can be congenital or can be the result of autoimmune breakdown of these ion channels (as noted in the following paragraph). A quick internet search can provide an impressive list of disorders caused by ion channel dysfunction including malignant hyperthermia, heart beat irregularities, periodic paralysis, seizures, and encephalitis.

I recently read an article by Dr. J. A. Mansfield and colleagues (2017) concerning psychiatric symptoms (e.g. psychosis, dementia, memory impairment, seizures, etc) stemming from the malfunction of voltage gated potassium channels (VGKCs). This is caused by VGCK antibodies. Now just the thought of all the work it would take for me really understand VGKC antibodies and their effect on potassium channels wearies me and makes me glad I am retired. However, in this case presentation, Dr. Mansfield, et al, describe the treatment of a 16 year old young man with voltage gated potassium channel autoimmune encephalitis. This case was initially treated by psychiatry because the admitting symptoms were psychiatric in nature (unresponsive for days, uncharacteristic foul language, disorganized thinking, persecutory and grandiose delusions, hyper-religiosity, and dysphoria).

Channelopathies may not be a new concept to you, particularly if you are younger. In the past decade or so, this notion has come to my attention a number of times but, admittedly, was new to me. I suspect we will hear much more about this in the coming years. I think the importance of working in psychiatric nursing is simply this- mental health issues are not going away and there is always something significant to learn. It also makes me wonder how many of the acute cases I saw years ago in the state hospital and VA systems might have been this type of fundamental cellular defect.

BIBLIOGRAPHY

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