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Editorial

Is it Lewy? Is it Lewy Parkinson's Disease? Is it Lewy Alzheimer's?

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What is Lewy? Have you heard of the term Lewy? What about Lewy Bodies (LB) or Lewy Neurites (LN)?

Always associated with Parkinson's Disease (PD) or Parkinson's dementia (PDD and even psychiatric disorders like schizophrenia (SP), these neurodegenerative disorders are part of the synucleinopathies family (SF) and characterized by the accumulation of aggregated forms of the unique protein alpha-synuclein (α-syn) which accumulates inside venerable neurons and LN in the brain. This protein accumulation impacts thinking, memory, behavior, sleep, mood (depression) and movement. These synucleinopathies are second to AD known to cause dementia.

The protein α-syn, is different than the tau and amyloid proteins associated with AD which also impact thinking, memory, sleep and mood. During attempted diagnosis of which neurodegenerative disorder is prominent, clinicians are often unable to discern whether it is PD, PDD or AD because of the similarities of symptoms. One symptom, presence of movement disturbances, often leads to an initial diagnosis of PD but can also occur in AD. During sleep in dementia patients there may exhibit continual low-level tremor or slight gentle vibrations felt through touch as if the brain is teaching the mind to cause these brain-induced symptoms. Whether this is a predictor of PDD is still being researched. The University of California at San Francisco in the USA as well as the Institute of Neuroscience, on the campus of the Ageing and Vitality, at Newcastle University in Newcastle upon Tyne, UK are leading this research.

In AD an often-discerning diagnosis symptom is nighttime mumbling or speaking out loud or whispering during certain cycles of sleep. In general, AD affects language and memory while PD affects problem solving (executive function or learning new activities-computers or different remote devices), speed of thinking, memory as well as mood (depression). Clinicians can often miss the PD diagnosis and indicate AD because of not asking about these specific executive function activity questions.

Blood tests are now available to detect the presence of tau and amyloid proteins but α-syn tests are still under development. Many individuals with PD develop PDD as the PD progresses. The dilemma presented to the clinician is in defining the stage of disease progression which may predict forthcoming dementia progress. The stages of PD are well defined: uncontrollable shaking and tremors, slowed movement (bradykinesia), balance difficulties and stiffness in limbs. Often not understood is the past traumatic experienced head trauma of a concussion or severe impact. In time the brain remembers and allows progression of α-syn or tau or amyloid deposits accumulation. Assessment tests are well defined for AD and tests for evaluating differences between PD and AD are available. Only post-mortem autopsies can actually determine whether an individual had PD, PPD or AD as the primary condition.

Medications are often prescribed for each of these conditions. They may be different but they do not slow or change the inevitable outcome of ongoing life. One must ask the question: Are there approaches clinicians can use to slow or even stop the accumulation of these deposits in various parts of the brain?

This Healthcare Advocate™ suggests the following: In a healthy person, α-syn helps neurons or brain cells communicate by producing chemicals including dopamine and acetylcholine. When the α-syn accumulates inside brain neurons the neurons no longer function

adequately and begin to die. As the nerve cells in the deep part of the brain called the basal ganglia and substantia nigra produce the neurotransmitter dopamine, how can this agent help possible improvement of these LB neurodegenerative conditions…and the complex disorder of depression?

Dopamine is stored in the brain and released into bloodstream when an individual experiences pleasurable sensation. It is a part of the individual's body motivation and reward system causing positive mood, feelings of productivity while increasing motivation. Is this neurotransmitter a support to improving depression where the mind activities repeatedly focus on what is forthcoming or has experienced previous experience(s) or negative conversations and disappointments? Should dopamine medication be added to the AD, PD or PDD diagnosed patient when there are signs of low dopamine production by the body? The levels can be determined. Several prescription medications providing dopamine are available worldwide.

And of course, there is the serotonin connection to mood changes and is believed to a component of depression along with inadequate levels of dopamine. Researchers have observed decreased levels of serotonin in people with depression, anxiety and transient PD, AD, PDD and ADHD (attention deficit hyperactivity disorder) and believe it plays a key role in progressive dementia AD and PD. Selective serotonin reuptake inhibitors (SSRI's) increase serotonin effectiveness in creating a happier, calmer and more focused individual. These medications block the reuptake of serotonin from the blood allowing a higher level of serotonin in the brain to build up between neurons so messages can be more effectively transmitted. Should SSRI's be added to the therapies used for the AD, PD or PDD diagnosed patient? As with dopamine, existing serotonin levels can be determined to determine need for medication. Prescription medications, natural medications and foods available worldwide can help raise serotonin levels in the body.

We cannot forget the role of the companion neurotransmitter acetylcholine which is involved in all movements of the body and organs through muscle stimulation contraction. Being found in many brain neurons, it also mediates transmission in mental processes such as memory and cognition and can be responsible for these changes in the dementia individuals with AD, PD and PDD. Should acetylcholine supplementation occur for the AD, PD or PDD diagnosed patient? Prescription and natural medicines/foods are available to increase acetylcholine levels in the body.

Prevalence of LBD (the Lewy Body Dementia Association) currently affects more than 1.4 million individuals in the USA and in PD is approximately twofold higher than in women. It is the second most prevalent type of dementia to AD which is currently estimated to be 6.2 million in the USA (2021 figures by the Alzheimer's Association) and 55 million worldwide increasing by 10 million each year (WHO-World Health Organization). The global societal cost of dementia was $1.2 trillion in the US alone (WHO-2020). Most of these individuals are 70 years or older and affects all ethnicities with Hispanics incidence highest following by non-Hispanic Whites, Asians and Blacks.

What is ahead? WHO is currently developing a Dementia Research Blueprint with global researchers to harmonize dementia research.

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