Covid-19 Neurology and review of Prophylactic and Genus Epidemic of Homeopathy

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ABSTRACT

Background: A sudden outbreak of pneumonia-like infection took place in the port -city of China, having similar symptoms and effected about 1500 cases since November 2019, which ultimately progressed to recent pandemic named Covid-19. We all know, it creates respiratory symptoms, confusion etc. In this study we are doing a narrative review on What are the anatomical and functional changes in brain caused due to Covid-19 infection? What is the role of homeopathy in treatment. Methodology: This is a narrative review of Covid -19 from Google Scholar, PubMed, Springer and manual search of some journals related to Covid-19, states that neurological symptoms corresponding to lobes of brain and role of Homeopathy in its treatment. Sample: Not applicable Results: In total of 18 reviews from Google Scholar, Pub Med, Springer and manual search resulted in inferring the results, metabolic changes take place in Prefrontal Cortex which mostly effecting insula and caudate nuclei resulting in relationship problems, emotional instability etc. In regards of Temporal Lobe symptoms like anosmia and ageusia is mostly related and Amygdala regions also resulting in impaired stress response due to sudden, unexpected changes in routine. Many studies also suggested, the individuals who received Ars. Alb are less susceptible to infection compared to others who did not receive the Ars.Alb and provided some protection against Covid -19. Conclusion: Our study demonstrated that neuroanatomical changes are result of neurological changes in patients affected with Covid -19 and Ars. Alb in Homeopathy had a preventive effect on it.

Keyword: *-: Lobes of Brain, Amygdala, Ars. Alb, Covid-19.*

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1. Introduction:

A sudden outbreak of pneumonia-like infection took place in the port -city of China, having similar symptoms and effected about 1500 cases since November 2019, which ultimately progressed to recent pandemic named Covid-19.

" We can alleviate physical pain, but mental pain - grief, despair, [1]depression, dementia - is less accessible to treatment. It's connected to who we are - our personality, our character, our soul, if you like" by Richard Eyyre— But what are the areas or regions in brain for such psychological symptoms? When should we take symptoms on a serious note and go to practitioner?

We all know, it creates respiratory symptoms, confusion etc. In this study we are reviewing

1.What are the anatomical and functional changes in brain caused due to Covid-19 infection?

2.What is the role of homeopathy in treatment.

Based on the studies related to Covid-19 like Neuroscience study of Brain Imaging changes, MRI studies of Radiological Society of North America, Evidence based studies in UK and studies involving imaging studies of

Covid -19 patients it can TNF – α and IL-8 are the biomarkers of CSF infection in the form of pleocytosis, it can be inferred most affected are Frontal and Temporal Lobes of the brain. This study also helps in earlier identification of symptoms which if neglected can lead to major problems

Neuroanatomy symptom categorization[2] provides a framework for organizing and understanding the diverse manifestations of neurological disorders. This study helps to establish links between brain structure and function, identify patterns of symptoms, improve diagnostic accuracy, predict treatment response, and guide the development of new interventions. By incorporating neuroanatomy into research, scientists can enhance their understanding of the underlying mechanisms of neurological disorders and ultimately improve patient care and outcomes.

1.1 Background:

This is a narrative review of Covid -19 from Google Scholar, PubMed, Springer and manual search of some journals related to Covid-19, states that neurological symptoms corresponding to lobes of brain and role of Homeopathy in its treatment.

.2. Literature Review:

In total of 18 reviews from Google Scholar, Pub Med, Springer and manual search resulted in inferring the results, metabolic changes take place in Prefrontal Cortex which mostly effecting insula and caudate nuclei resulting in relationship problems, emotional instability etc. In regards of Temporal Lobe symptoms like anosmia and ageusia is mostly related and Amygdala regions also resulting in impaired stress response due to sudden, unexpected changes in routine. With this study, the results can help in early prevention, detection and treatment of the disease by understanding the localization of the structures of the brain involved.

Parts of the Brain	Structures of parts effected	Functional Changes
1.Frontal Lobe (higher-order cognitive functions, decision-making, personality, and social behavior-Executive Functions.)	1. Olfactory Bulb -oedema 2. Pre-Frontal area 3. Rolandic Opurculum 4. Anterior Cingulate Gyrus 5. Caudate Nucleus 6. Left and Right Orbital – inferior gyrus 7. Rostral Anterior Cingulate Cortex(rACC)	1. Anosmia, dysosmia 2. Cognitive disturbance, depression, anxiety, Persistent fatigue 3. Apathetic Depressive Symptoms, Gustatory dysfunction. 4. Interpersonal Behavioural problems, cognition problems, atten tion problems like acute attention, poor concentration. 5. Dyskinesis, Executive function difficulties, dysphonia 6. Semantic and Social Perception problems 7. Chronic pain conditions, decision making problems, impaired empathy
2.Temporal Lobe (Auditory processing, Memory retrieval, Language Comprehension, Face recognition, Emotional processing, visual perception and spatial navigation-Reward Seeking	1. Hippocampus (Medial Temporal Lobe)-particularly in Para hippocampal gyrus 2. Heschl's Gyrus 3. Piriform cortex (Olfactory	1. Memory dysfunction both episodic and factual information can lead to problem in forming new memories, spatial orientation.

memory formation, motivation, and the processing of rewards and punishments.

behaviour)	Cortex) 4. Entorhinal Cortex 5. Amygdala	2. Tinnitus, auditory hallucinations, speech perception problems 3. Anosmia, altered sensorium 4. Problems remembering past events, organization and perception problems 5. Irrational Fear response, impulsive, aggression, memory retrieving problems
3.Limbic System (Fifth Lobe occasionally), Brain Stem (The limbic system is involved in regulating emotions, memory formation, motivation, and the processing of rewards and punishments.	1. Insular cortex area 2. Right Cingulate Gyrus 3. Superior Insula 4. Locus coeruleus 5. Pons Caudate Nucleus	1. Depression, PTSD, OCD, schizophrenia 2. Anxiety Problems, Bipolar, Addiction issues, dementia. 3. Apathy, depression due to chronic pain, decreased motivation, interest 4. Hyperalgesia, hypoalgesia, non-epinephrin imbalance, sleep disorders 5. Hallucinations, delirium, slurred speech, tremor 6. Abulia, agitation, nuchal rigidity
4. Parietal Lobe	1.Posterior Cingulate Cortex (action, planning and control)	1.Aggressive behavior, shyness.
5. Occipital Lobe	1.Precuneus areas	1.Aggressive behavior, shyness.
6.Diencephalon and Cerebellum	1.Right and Left Thalamus	1.Difficulty in swallowing, agitation, insomnia, aphasia

Table -1:
Table of different parts of brain, corresponding parts of brain effected, and functional changes. Word Meanings: Hyperalgesia – Increased sensation of pain, Apathetic-Showing no interest, Dyskinesis –Involuntary erratic movements of face, arms or leg, semantic problems-language acquisition problem, Anosmia- Partial or full loss of smell, Abulia – Absence of willpower, Nuchal Rigidity – Neck stiffness--- This study also helps in earlier identification of symptoms which if neglected can lead to major problems and to improve mental awareness.
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2.1 Discussion:

From the frequency distribution, we can Attribute that Eventhough Brain Stem and Limbic System got affected only in 5 regions, the functional disturbances they cause are more compared to other lobes.

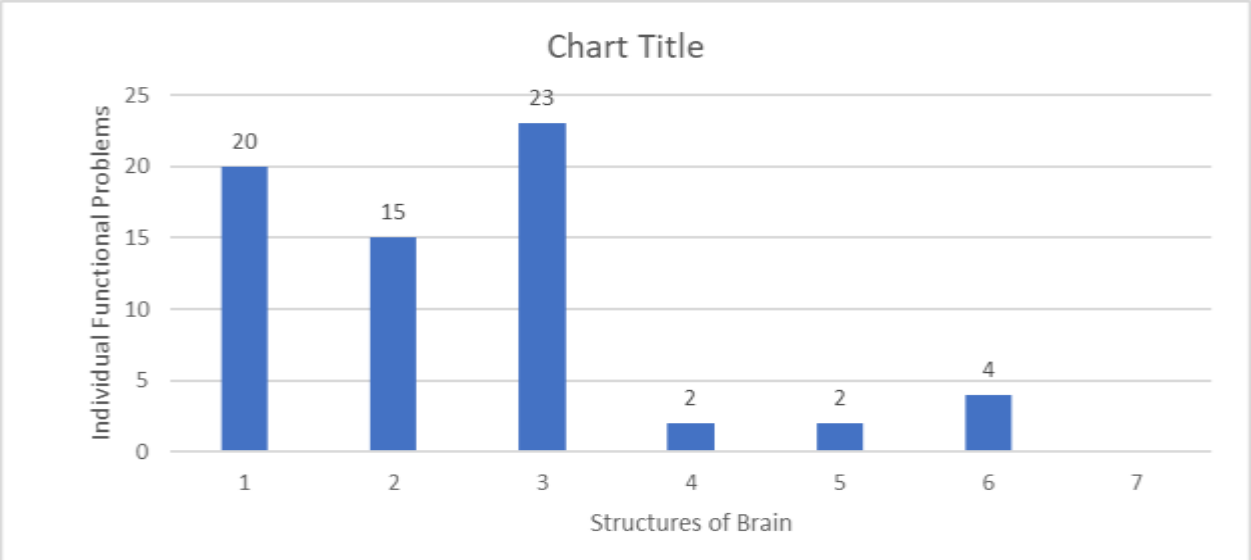


Chart-1: 1. Frontal Lobe, 2. Temporal Lobe, 3. Limbic System and Brain Stem,4. Parietal Lobe, 5. Occipital Lobe,6. Diencephalon and cerebellum

2.2: Explanation of Functions: List of items

1. Pre-Frontal Cortex:
    a. Focusing one's attention. Predicting the consequences of one's actions; anticipating events in the environment. Impulse control; managing emotional reactions. Planning for the future.
2. The anterior cingulate cortex:
    a. It plays a strong role in overall affect, or emotional expressiveness. This area of the brain helps translate emotion into physical expression. It can do this because many of its neural connections are linked to the limbic system, the source of emotions.
3. The amygdala: FEAR, IMPULSION, ARRESSION
    a. It is responsible[3] for the perception of emotions such as anger, fear, and sadness, as well as the controlling of aggression. The amygdala helps to store memories of events and emotions so that an individual may be able to recognize similar events in the future
4. The insula:

    It is important for gustatory[4] and sensorimotor processing, risk-reward behavior, autonomics, pain pathways, and auditory and vestibular functioning. It is because of insula that people are able to perceive pain and have the awareness about their body and self. OCD, SCHIZOPHRENIA
5. The anterior cingulate cortex
    a. It is implicated in emotion, [5]because it is involved in linking reward and punishment information, which elicit emotional responses, to behavior, and, in particular, to actions. The

subequal cingulate cortex (area 25) may link rewards and punishers to autonomic output. -EMPATHY, CHRONIC PAIN

6. The limbic system functions

    a. It is to facilitate memory storage and retrieval, establish emotional states, and link the conscious, intellectual functions of the cerebral cortex with the unconscious, autonomic functions of the brain stem. -EMOTION

7. The locus coeruleus (LC), or 'blue spot',

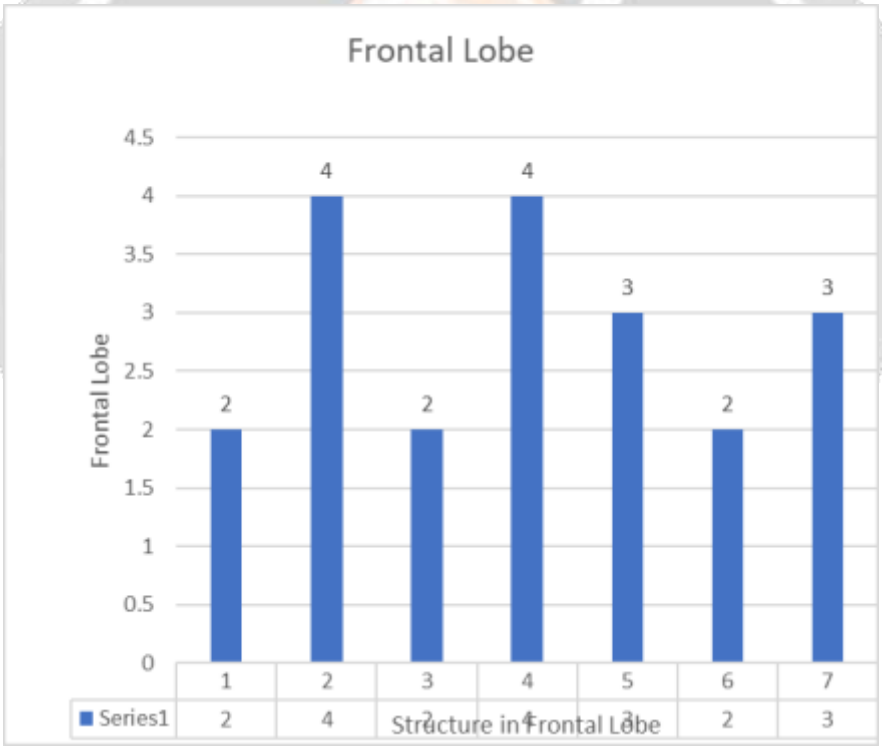
8. It is a small nucleus located deep in the brainstem that provides the far-reaching noradrenergic neurotransmitter system of the brain. -PAIN

9. Thalamus:

    a. It Receives messages from Sense Organs eyes, ears, nose

3. Results

Frontal Lobe:



1. Olfactory Bulb -oedema

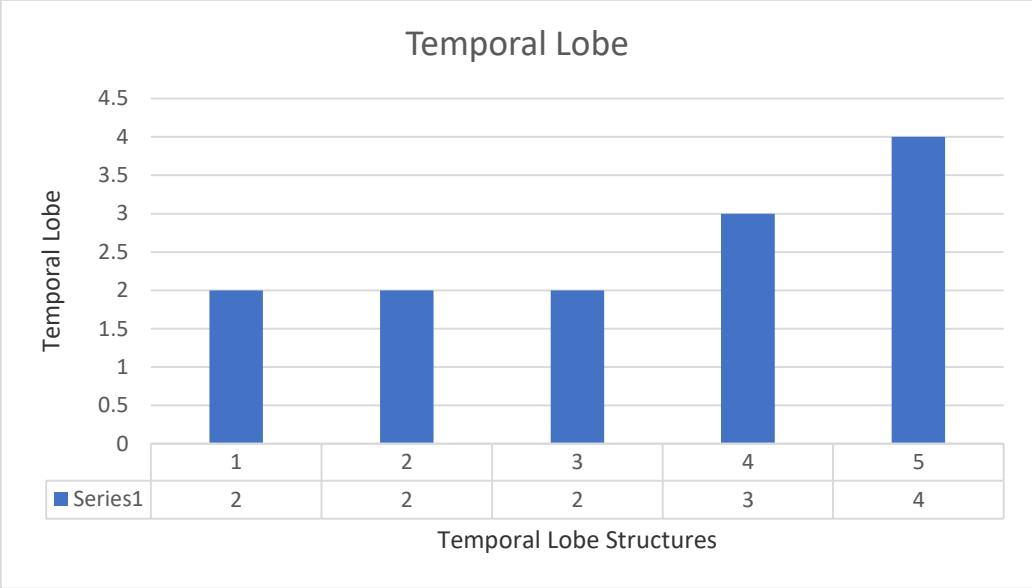
2. Pre-Frontal area -Cognitive disturbance, depression, anxiety, Persistent fatigue

3. Rolandic Opurculum

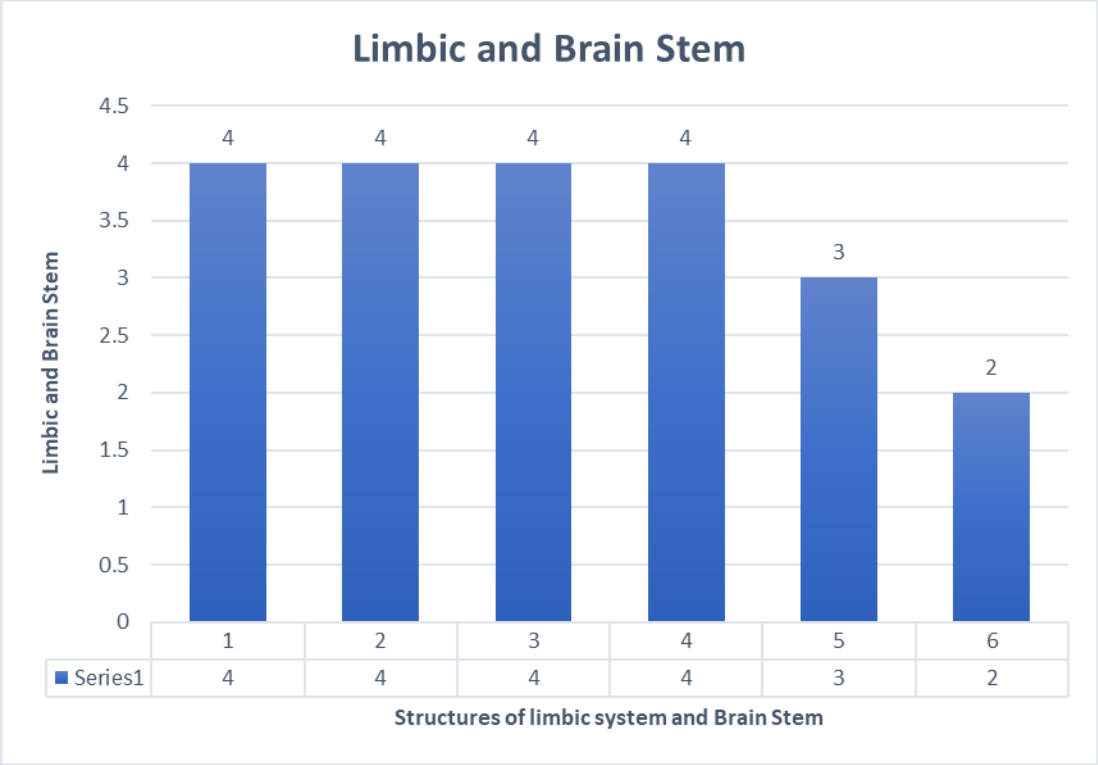
4. Anterior Cingulate Gyrus - Interpersonal Behavioural problems, cognition problems,

5. attention problems like acute attention, poor concentration.

6. Caudate Nucleus
7. 6.Left and Right Orbital –inferior gyrus
8. 7.Rostral Anterior Cingulate Cortex(rACC)



1. Hippocampus (Medial Temporal Lobe)-particularly in Para hippocampal gyrus
2. Heschl's Gyrus
3. Piriform cortex (Olfactory Cortex)
4. Entorhinal Cortex
5. Amygdala (Irrational Fear response, impulsive, control of aggression, memory retrieving problems)



1. Insular Cortex area (Depression, PTSD, OCD, schizophrenia), Addictive Behaviour-Alcoholism-Dopamine pathway
2. Right Cingulate Gyrus (Anxiety Problems, Bipolar, Addiction issues, dementia.)
3. Superior Insula (Apathy, depression due to chronic pain, decreased motivation, interest)
4. Locus coeruleus (Hyperalgesia, , hypoalgesia, Non-epinephrin imbalance, Sleep Disorder
5. Pons
6. Caudate Nucleus

3.1 Role of Homeopathy:

Homeopathy works on the principle of immunotherapy; the treatment is based on creating artificial disease symptoms therefore treating the disease. It increases the immunity in minimal dose, finally treating the symptoms. In the table we discussed about Ars.Alb and Gelsemium in neurological treatment are considered as preventive in many Covid -19 effected individuals. In Homeopathy, they treat based on individual approach to stress and match underlying cause of disease.

Homeopathy has been used for treatment and prevention in the epidemics of Cholera, Spanish flu, Dengue, Chikungunya, Acute encephalitis syndrome, etc. with variable success There is anecdotal evidence that homeopathy was successful during the Spanish flu epidemic of 1918, in which at least 20–50 million people died worldwide .

According to retrospective analysis [5] on Covid-19 in 2020 it is inferred, Homoeopathy has played a notable role in managing epidemics in the past. The Ministry of Ayush, Government of India, declared Arsenicum album 30 C as a

prophylactic for Covid-19, which was followed by the distribution of the medicine across in India. Regarding Gelsemium, [6]it is considered as Genus Epidemics according to study conducted in China on Covid-19 patients.

Ars.Alb: He displays a picture of a person having a grey mood, filled with hopelessness and irritability with a scaly, pale, dry, waxy and parchment like skin. Not only their mood is corrosive like an acid, but also is their body discharges and secretions. Apart from all these, at the same time, he manages to show a fastidious nature, well dressed, neat and tidy although not-so attractive like Phosphorus. He wears stylish clothes, keeping everything tip-top and orderly.

"Psychophysiological Development of Arsenicum Album," 2022

Gelsemium: Gelsemium is also needed for those who fall sick after a period of high anxiety, after an ordeal which involved anxiety (and possibly fear), after a test, an exam or interview, or after giving a presentation, etc.

The ordeal may have involved a visit to the dentist or hospital or long-distance travel where there was a tremendous amount of anxiety involved leading up to the event.

4. CONCLUSIONS

Our study demonstrated that neuroanatomical changes are result of entry of neurotropic covid -19 virus to brain in patients affected with Covid -19 and Ars. Alb, Gelsemium in Homeopathy had a preventive effect on it. There is a need of more experimental and longitudinal studies in future for better understanding of neuropathological changes and early intervention measures. Neurological symptoms should be ruled out with Post –Covid 19 complications. It helps in early prediction of psychological or neurological symptoms.

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