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RESEARCH ARTICLE

LATE-ONSET PSYCHIATRIC MANIFESTATIONS OF ENCEPHALOMALACIA AND GLIOSIS WITH UNCERTAIN ETIOLOGY

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Abstract

Background: Encephalomalacia refers to the loss of brain tissue resulting from liquefactive necrosis, which can occur due to a variety of insults including trauma, infarction, infection, or haemorrhage. This process may also lead to gliosis, and such changes are typically evident on CT or MRI scans, which remain the primary diagnostic modalities. Clinical presentation varies depending on the location and extent of brain involvement, ranging from seizures and focal neurological deficits to psychiatric manifestations, as observed in this case. Chronic encephalomalacia is most commonly associated with hypoxic injury sustained during birth or infancy, but when presenting later in life with isolated psychiatric symptoms, it can pose a significant diagnostic challenge. This case highlights the importance of considering underlying organic causes in psychiatric presentations and emphasizes a thorough diagnostic approach prior to initiating treatment.

Case Report: We present the case of a 21-year-old female who presented to the clinic with symptoms of depressed mood and bizarre questioning. She had a longstanding history of intellectual and cognitive delays that had not been thoroughly investigated. Further history from the family revealed a significant perinatal background, including premature birth at 32 weeks and delayed crying at birth, suggesting possible early hypoxic insult. An incidental diagnosis of encephalomalacia was made approximately one and a half years prior during neuroimaging conducted after an accidental fall. The patient also had a history of congenital esophageal atresia, surgically corrected at the age of nine. However, she continued to experience difficulty swallowing solid substances, including oral medications, which posed challenges in determining an appropriate treatment plan. Ultimately, she was managed with long-acting injectable Aripiprazole, in addition to Escitalopram and Benztropine.

Conclusions: This case highlights a rare psychiatric presentation of chronic encephalomalacia. It underscores the importance of early neuroimaging in patients with atypical or treatment-resistant psychiatric symptoms, especially when accompanied by developmental delays. Timely identification of organic causes can prevent diagnostic delays and guide appropriate, individualized management. Further research is warranted to better understand adult psychiatric manifestations of encephalomalacia and optimize care strategies.

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Introduction:-

Encephalomalacia comes from ancient Greek with en- meaning 'in' + kephalḗ meaning 'head' + malakía meaning 'softness/sicknesses'. Pathologically it means softening of the brain which occurs due to liquefactive necrosis. This loss of brain tissue can occur due to a wide variety of reasons causing injury to the neurons like infarction, ischemia, infection, haemorrhage, trauma or any other form of injury [1]. It may also be classified on the basis of the presence of gliosis as well [2]. In spite of many identified causes the understanding of the risk factors predisposing to encephalomalacia remains limited [3]. Depending on the area of brain involved it can manifest with different symptoms ranging from focal neurological deficit to memory problems and behavioural changes. Symptoms of encephalomalacia depends on severity of the disease. Many patients may not present with the typical symptoms like epilepsy or focal deficits which leads to delay in the investigation and diagnosis. It may also present with psychiatric manifestations like psychosis which adds to the difficulty of making the diagnosis of encephalomalacia as it may not be attributed to it early on [4].

Most of the cases of encephalomalacia are generally diagnosed early on in the childhood as a result of Hypoxic Ischemic Encephalopathy but some rare cases have been reported in adulthood as well [2].

Diagnosis of Encephalomalacia is mainly based in imaging. The choice of imaging depends upon the age as ultrasonography may be used early in infancy [5] while MRI and CT remain the most important modality of diagnosis. Radiologically encephalomalacia is any area of cerebral parenchymal loss with or without surrounding gliosis. CT generally shows features like hypoattenuation and loss of parenchymal volume which may be associated with gliosis and Wallerian degeneration and MRI tends to show a low signal on T1 and a high signal on T2 with full attenuation on FLAIR [6].

Different part of brain has long been correlated with specific manifestations which forms one of the bases of organic/ biological causes of psychiatric illnesses. For instance, dysfunction of areas producing monoamines like dopamine, serotonin and norepinephrine like frontal lobes and basal ganglia have been linked to disorders related to depressive mood; temporal and parietal lobes to delusions; cortical and subcortical areas to cognitive dysfunction and Apathy and many other forms of executive dysfunction can be seen in injury to frontal subcortical loop circuits [7]. This also explains the psychiatric manifestation due to encephalomalacia.

As far as treatment of encephalomalacia is concerned, it depends on the symptomatology of the patient and the severity of symptoms and options include medications, surgery and rehabilitation. As this condition indicates permanent damage to neurons, treatment is mainly focused on managing the symptoms and any underlying condition.

The existing literature, demonstrates a clear deficiency in understanding the relationship between encephalomalacia and psychiatric symptoms, particularly psychosis in adults. This case report aims to bridge this knowledge gap by presenting a rare clinical case of encephalomalacia presenting predominantly psychiatric disturbances, thereby contributing to a better understanding of this complex presentation.

Case Report.

A 21-year-old female presented to clinic with depressed mood and history of repeatedly asking bizarre questions. These symptoms were recently exacerbated due to a sudden relocation from a neighbouring country. She also has a long-standing history of intellectual and cognitive delays as well as stuttering. She did manage to finish eleventh grade and had been married for 3 years. She was evaluated by multiple physicians in the past for these symptoms but has not had any significant improvement.

Her birth history revealed that she was born prematurely at 32 weeks to a healthy 23-year-old mother and did not cry immediately after birth. She was also born with esophageal atresia which was treated surgically at 10 months of age. She had to be on feeding tube till 9 years of age and still continues to have difficulty swallowing. Although there was no history of failure to thrive, she did have some intellectual and cognitive delays which were more closely related to comprehension difficulties and speaking. She didn't have any radiological assessment of the brain till 1.5 years ago when she fell down and it ultimately led to her having an MRI which revealed mild apparent optic nerve atrophy without intrinsic optic nerve signal abnormality along with multifocal chronic cortical encephalomalacia, with extensive gliosis. Multifocal deep white matter infarcts and other areas of scattered signal hyperintensity were also seen.On interviewing the patient, she appeared to be well groomed with appropriate clothing and appeared to be the stated age. She seemed to have psychomotor agitation with guarded responsiveness along with intermittent eye contact. Her speech was complicated by excessive stuttering and was unable to give a streamlined history. She had anxious affect with constricted variability and it was reactive and mood congruent. Her thought process was disorganized and she admitted hearing voices which were described as random human voices which told her to do things. She appeared to be alert and oriented to place and person but was not oriented to time and could not tell the

time, day, month or season when prompted. She also seemed to have a poor insight and judgement. It was also noted that she had shorter fingers of the right hand consistent with symbrachydactyly which seemed to be unrelated.
Choice of medications had to be made considering the difficulty swallowing pills and heightened paranoia which led to her refusing any oral medication and hence it was decided to start with Aripiprazole 720mg IM every 60 days along with Escitalopram Oxalate 5 mg as an Oral Solution once a day which was planned to be increased and titrated accordingly. She was also prescribed Benztropine Mesylate 0.5 mg twice a day PO.

Discussion and Conclusion.

This case illustrates a rare presentation of chronic encephalomalacia with prominent psychiatric features. Imaging findings suggest that the encephalomalacia was longstanding, likely resulting from perinatal hypoxic-ischemic injury due to prematurity and delayed crying at birth.
In general, psychiatric symptoms arising from organic brain lesions prompt investigations directed at identifying and treating the underlying cause. However, when damage is irreversible—as in chronic encephalomalacia—treatment focuses on symptom control and improving quality of life.
This case also emphasizes the importance of early neuroimaging in patients with developmental and psychiatric concerns, particularly when symptoms are refractory or atypical. The diagnosis in this patient was only made incidentally following a fall, despite years of cognitive and behavioural symptoms. Cases have been reported with chronic psychiatric manifestation like psychosis and schizophrenia like symptoms associated with encephalomalacia and gliosis after trauma [8] but in this case, it could not be attributed to fall as the MRI had chronic changes suggesting an earlier insult and there was no history of any other trauma. Although it is hard to pin point the exact aetiology with full certainty, this underscores the diagnostic delays that can occur when psychiatric symptoms are not immediately linked to possible neurological or structural causes.
Overall, management must be individualized, taking into account the patient's needs, functioning, and goals. Given the limited data on adult psychiatric presentations of encephalomalacia, especially those involving psychosis, further research is needed to guide early diagnosis and therapeutic strategies.

Declarations.

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