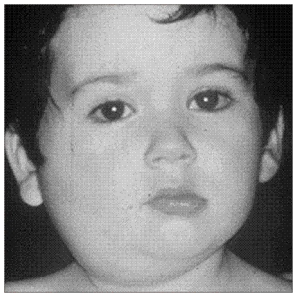
CASE REPORT **PROF-868**

PERSISTENT PSYCHIATRIC SYMPTOMS AFTER MUMPS ENCEPHALITIS



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ABSTRACT ... sohailali@hotmail.com Encephalitis refers to an inflammation of the brain tissues. It can involve different regions of the brain and can be caused by different etiological agents. In many cases it is followed by complete remission, but can also infrequently result in transient or persisting post encephalitis sequalae. These sequalae can manifest as a wide variety of clinical presentations, which pose challenges to clinicians in the realms of diagnosis and management. We report a case of persistent psychiatric symptoms following mumps encephalitis in an 8 years old child.

Key words: Mumps, Encephalitis, Hyperactivity.

INTRODUCTION

Master Usman (fictional name), is an eight years old boy, enrolled in kindergarten since the last two years. He was brought to the Dr. S Ali by his parents for assessment and treatment of the complaints listed below. He is the fourth of five siblings, and the only son, of a middle class family from Faisalabad. They live as a nuclear family, and there is no history of mental illness among his siblings or other relatives.

HISTORY

He was brought to the Dr. S Ali with the following complaints, which developed after a febrile episode, starting one and a half years ago;

1. Hyperactivity and impulsivity.
2 Loss of learned activities, including vocabulary and fine motor skills.
3 Declining school performance.
4. Unmanageable behavior.

5. Repetitive actions and words.
6. Visual hallucinations.

The problems started one and a half years ago, when he suffered from a febrile illness lasting two weeks. The fever was of gradual onset, low grade and remittent in nature, responding only transiently to antipyretic treatment, and was associated with bilateral parotid swelling. Accompanying symptoms included some drowsiness, headache and vomiting. One of his sisters simultaneously had a similar illness. Both children were examined by a pediatrician, and managed as a mumps viral infection. His sister recovered completely, but he did not. He was hospitalized and experienced two generalized tonic-clonic fits. Several investigations were done, including CT scan and MRI of the brain, which were both normal, and EEG which revealed no abnormality. Cerebrospinal fluid examination at this time revealed elevated proteins (58 mg/dl) but was otherwise normal.

Following his discharge from the hospital, Usman became increasingly hyperactive, reckless and impulsive. He repeatedly inserted his fingers into electric sockets, and was unable to concentrate on tasks for any substantial time. His school performance fell markedly, with teachers complaining that he couldn't sit still, disturbed other children, and couldn't learn lessons. This was a marked change from his previous academic performance, school records indicated that he was an average student with no significant behavioral problems in his previous two years of schooling. At home he became disruptive, stubborn, and started having tantrums. He began self mutilation, injuring his hands by biting them repetitively, especially when his parents didn't fulfill any of his wishes or whenever he was distressed due to any reason. He started eating inappropriately, snatching things from the hands of other children, and even taking inedible objects. He did things repetitively e.g. carrying around a water can in the house, and even sleeping with it; and repeating words which were spoken in his presence. However he did respond to emotions such as love and anger, but only transiently.

Developmental history revealed that Master Usman was born by normal vaginal delivery, in a tertiary care hospital, after a full term uneventful pregnancy. During his preschool years, his social and cognitive development was satisfactory (as reported by his mother, who is a qualified staff nurse). Although his motor development was generally within normal range, his parents reported that he was mildly hyperactive, saying "He learnt to run rather than walk." but this was not troublesome to the family. His school performance was good until he became ill while in kindergarten.

EXAMINATION & INVESTIGATIONS

His general physical examination revealed normal height and weight for his age, normal vital signs and no obvious stigmata of physical illness except bite injuries on both hands. The systemic examination was also unremarkable, and no neurological deficits were detectable. The mental state examination confirmed the findings reported in the history "he gave the impression of a child with mild mental retardation and prominent behavioral dyscontrol. He was somewhat dysphoric and very demanding".

The following investigations were undertaken:

1. Hemoglobin level, erythrocyte sedimentation rate, total ad differential leukocyte counts.
2. Biochemical and microscopic examination of urine.
3. Peripheral blood picture for malarial parasite.
4. Antistreptolysin O antibody titers.
5. Cerebrospinal fluid examination.
6. Computerized tomography of the head.
7. Magnetic resonance imaging of the head.
8. Slit lamp examination for Keyser Fletcher rings.
9. Electroencephalography.
10. Intelligence assessment.

All the investigations were unremarkable except the intelligence assessment by a clinical psychologist, which revealed that he fell into the moderately mentally retarded range. However the psychologist commented that his hyperactivity may be hindering his ability to

perform the tests.

DIFFERENTIAL DIAGNOSIS

The following differential diagnosis was considered:

• **Post encephalitis syndrome:** Such neuropsychiatric sequalae occurring after a mumps infection have been rarely reported in the text, and where reported, have been seen to be mild, transient, and with a self limiting course[1,2,3]. This child however, has persistent severe symptoms; still manifest 1.5 years after the episode of encephalitis.

• **Personality change after encephalitis:** This diagnostic entity is used for persistent changes in the basic traits of an adult after brain injury due to any cause, or persistent and marked deviation from the normal expected development of a child after brain injury. The symptoms persist for more than a year, and are often permanent[3,4,5]. However this diagnosis is rarely made in children.

• **Post meningitis sequalae:** Neuropsychiatric sequalae after meningitis are frequently reported[2,6], but the cerebrospinal fluid examination in this case made this diagnosis highly unlikely.

• **Cerebral Malaria:** Initially suspected by the managing pediatrician, the negative blood picture and cerebrospinal fluid examination made it improbable.

• **Mental retardation:** Although the child's intellectual impairment raised this possibility, there was no objective evidence of delayed milestones in any area of development before the onset of this illness.

• **Primary psychiatric: disorders such as pervasive developmental disorders or attention deficit hyperactivity disorder:** The clinical features were suggestive of these disorders. But these features were secondary to the febrile illness temporally. Besides that, these disorders are usually detectable and disabling even during the preschool years.

• **Poststreptococcal infection sequalae:** Although rare, symptoms of this nature have been reported after streptococcal infection[2,3,6], but movement disorders still remain the main manifestations expected. Antistreptolysin-O antibody titers were found to be negative in this case.

• **Wilson's disease:** This disorder can often present with only neurological features and no hepatic stigmata initially[3,6], but Keyser Fletcher rings are considered a very common finding, which were absent in this case.

DISCUSSION

The mumps virus belongs to the group called paramyxoviruses, and affects mainly children and young adults, through droplet infection. The infectivity rate is not high, and there is serological evidence that 30-40% cases are asymptomatic. Where symptomatic, it usually manifests as malaise, fever, trismus, and pain over the angle of the jaw; followed by unilateral or bilateral parotid swelling, subsiding in a few days. Possible complications include orchitis and later sterility, pancreatitis, oophoritis, acute lymphocytic meningitis, or rarely encephalomyelitis[3,6].

Viral encephalitis can occur due to a variety of infections, such as the enteroviruses, herpes simplex virus, mumps virus, and influenza virus etc. The usual clinical presentation is with headache, fever, disturbed consciousness, meningism, different focal neurological signs, epileptic seizures and raised intra cranial pressure. Some viral infections have distinguishing features, such as the rabies infection, and to some extent, herpes simplex encephalitis (which tends to present with signs of temporal lobe dysfunction and specific EEG changes[1,2,3].

Herpes simplex encephalitis is the one most commonly associated with psychiatric symptoms occurring during or after the infection. During the active infection, besides the common features mentioned above, patients can present with an acute confusional state, a sudden transient psychosis, or an insidious development of personality change or memory impairment. The

electroencephalograph may show diffuse slow wave activity with periodic discharges. Mortality is high, approximately 70%, while survivors may be left with deficits related to temporal and frontal lobe damage, such as a dense amnesia disproportionate to the degree of other intellectual impairment; hallucinations in all modalities, including olfactory and gustatory; components of a Kluver-Bucy syndrome; partial complex seizures; aphasia and anosmia[3].

The case being discussed here is atypical in a number of aspects, viz:

1. Post encephalitis sequalae are rarely seen after mumps infection.
2. If seen, they are usually mild in nature.
3. They rarely last this long (1.5 years now).
4. There are no hard neurological signs present in this case, despite severely handicapping and persistent psychiatric symptoms.
5. Guidelines about management are difficult to find.
6. This case is difficult to fit into a discrete diagnostic category because of its uncommon features, as explained in detail below.

Neuropsychiatric complications arising after viral encephalitis are categorized differently by the World Health Organization (in the International Classification of Diseases, 10th Edition, ICD-10)[4] and the American Psychiatric Association (Diagnostic and Statistical Manual 4th Edition. DSM-IV)[5]. Using an appropriate diagnostic category is important because it has implications on the management and prognosis of the case,

In ICD-10[4], the broad category that would contain such cases is called Personality and Behavioral Disorders due to Brain Disease, Damage and Dysfunction. The most obvious diagnosis would seem to be Post encephalitis syndrome; but this diagnosis requires the presence of neurological deficits such as paralysis, deafness, aphasia, constructional apraxia, or acalculia, in addition to the psychiatric symptoms. The other possible diagnosis for this patient could be Organic Personality disorder (which codes for personality changes occurring after a brain insult), but this diagnosis is also inappropriate because it is mostly meant for adult patients and requires a minimum duration of 2 years of persistent symptoms. The only appropriate diagnosis then comes to the residual coding of Other Organic Personality and Behavioral Disorders due to Brain Disease, Damage and Dysfunction.

The diagnosis according to DSM-IV [5] is less difficult. Surprisingly there s no DSM-IV coding equivalent to the post encephalitis syndrome of ICD-10. The broad category that would contain such illnesses is called Mental Disorders due to a General Medical Condition Not Elsewhere Classified and the exact coding would be Personality Change due to a General Medical Condition. This diagnosis requires persistent behavioral change lasting a minimum duration of one year, and evidence of a cause and effect relationship with a general medical condition. It also contains a specific clause for children viz: “In children, the disturbance involves a marked deviation from normal development, or a significant change in the child’s usual behavior patterns lasting at least one year.”

Therefore the final diagnosis in this case would be Personality Change due to a General Medical Condition, according to DSM-IV; and Other Organic Personality and Behavioral Disorders due to Brain Disease, Damage, and Dysfunction, according to ICD-10.

Guidelines about management of such as case are very difficult to find in the literature, because of the rare nature of the illness. However, the following options can be considered on the basis of what little information is available[1-6]:

Pharmacological interventions: The following can be tried, initially sequentially, and then in combination as required;

*Central nervous system stimulants such as methylphenidate and amphetamines can be used for

controlling the hyperactivity and inattention. The response rate is not likely to be as good as in pure attention deficit hyperactivity disorder (ADHD), and neuropsychiatric side effects may be more common.

*Antipsychotics can also be tried for the behavioral dysfunction and agitation. The novel antipsychotics would probably be more suitable than the conventional ones because of the lower risk of extra pyramidal side effects and tardive dyskinesia with the former group, especially because these medications would probably be needed for long durations[3].

* The anticonvulsants used as mood stabilizers should also be tried, because there is evidence of their effectiveness in reducing agitation, disruptive behavior and aggression[1,2,3].

* Tricyclic antidepressants, second-line treatments for ADHD, may be tried with the usual caution due to potential cardiovascular side effects.

Psycho social interventions: The following should be considered:

* Counseling of the parents about the illness and its management and prognosis.

* Behavioral interventions to reinforce desired behavior and to reduce undesirable and disruptive behavior.

* Training of the parents about how to manage the child's behavior problems without panicking.

* Dealing with the parent's own possible feelings of frustration, guilt, and hopelessness etc.

* Developing a collaborative plan about the child's possible education or training, in order to maximize whatever potential he still retains.

* Multi disciplinary team management involving a psychiatrist, psychologist, parents, school teachers, social workers etc.

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