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A CASE OF ACUTE PSYCHOSIS FOLLOWING DENGUE FEVER

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ABSTRACT:

Dengue fever has been infecting millions of people all around the world specially the rural areas of South East Asia according to World Health Organization. It is caused by an Arbovirus and transmitted by the bite of an infected female *Aedes aegyptii* mosquito. Dengue commonly presents with fever and thrombocytopenia; rare presentations include acute pancreatitis, dengue hemorrhagic stroke and encephalopathy. Common psychiatric complications of dengue fever include anxiety, depression, manic episodes and catatonia. We present a rare case of a 51 year old man who presented with an acute episode of psychosis including over talkativeness, irritability, authoritative and disinhibited behavior, suspiciousness, over familiarity, self important ideas and loss of sleep 15 days following dengue fever. Rapid resolution of symptoms was seen with low dose anti-psychotics and patient fully recovered over a follow up period of 2 months. Literature on psychosis following dengue fever is sporadic with very few publications. Every patient coming from those areas where dengue is endemic and presenting with acute onset of psychotic disorder followed by fever should be screened for dengue. Early recognition is important for appropriate treatment and family counseling about the likely temporary nature of the patient's symptoms.

Keywords: Dengue fever, Arbovirus, *Aedes aegyptii*, psychosis

INTRODUCTION:

In 1789 the first case of dengue fever was reported by Benjamin Rush who penned the name "break bone fever" describing this condition due to its association with joint pains^[1]. It is an infectious disease of viral etiology transmitted by the bite of the female genus *Aedes*, such as *Aedes aegyptii* and *Aedes albopictus* mosquitoes. It belongs to the Flavi-viridae family and has four recognizable sero types ; DEN-1, DEN-2, DEN-3, and DEN-4^[1]. The incubation period ranges from 3 to 14 days, averaging to about 4 to 7 days. Once it has bitten a person the virus multiplies in the lymph nodes and undergoes haematogenous and lymphatic dissemination to other tissues leading to viremia. Dengue has been ranked as the 2nd most dangerous vector-borne disease worldwide after malaria^[2]. The disease burden of dengue fever was about 25.5 disability-adjusted life years per 100,000 population globally^[2]. Since 2014 mortality and morbidity with dengue fever in South east Asian countries has significantly increased experiencing

massive outbreaks affecting 50 million people annually^[2]. Infection with dengue virus comprising of any of the four sero types results in a cascade of inflammatory responses causing illness which may range from no symptoms to mild symptoms like fever, retro-orbital pain, body aches, joint pains and headache to severe symptoms and fatal haemorrhage mainly depending on the age and immunological condition of the patient^[3]. Common neurological manifestations of dengue fever include Guillain-Barre Syndrome, haemorrhagic or ischemic stroke, cranial nerve palsies and encephalopathy^[4]. Atypical encephalopathy can present with seizures, neck rigidity, pyramidal tract involvement, headaches, myoclonus, papilledema and behavioral disturbances^[4]. Psychiatric symptoms may occur during the acute phase of dengue fever or could be a late manifestation of the disease. Post-infectious sequelae of dengue mainly consist of memory impairment, dementia, catatonia, manic episodes, anxiety, depression, Reye's syndrome and

meningo-encephalitis^[5]. Here we are presenting a rare case of a patient who had dengue fever and developed acute psychosis 15 days later. Rapid resolution of psychosis was seen with low dose anti-psychotics and patient symptoms alleviated on a follow up period of 2 months.

CASE PRESENTATION:

A 51 year old male having 4 children, educated up to 7th grade and a bus driver by profession was admitted through out patient department with complaints of over talkativeness, irritability, suspiciousness, disinhibited behavior, over familiarity, self important ideas and loss of sleep for 6 days. Informants included patient himself and his children who live together and knew him well for the past 22 years. Patient had history of dengue fever 15 days ago and remained admitted in a local hospital where he was treated symptomatically and was discharged after 8 days with complete recovery. He remained at home after discharge and 5 days later developed over talkativeness with family over long periods of time. This was accompanied by disinhibited behavior and started passing comments to people he was unfamiliar with. He could not fall asleep properly but wouldn't feel tired. He felt energetic and believed he was sent by God to deliver His blessings to people. His hyper-activity increased during night. Upon confrontation he used to get aggressive and threw things on the floor. These symptoms worsened with time. There was no history of visual, auditory, olfactory, tactile or gustatory hallucinations. He denied depressed mood, crying spells, hopelessness, suicidal ideas or low energy. He didn't feel hungry or tired. He believed that he wouldn't rest or sleep until his mission was accomplished. There were no complaints of social withdrawal, weakness in limbs, nausea, vomiting, photophobia, skin rash, loss of vision or balance or sphincter disturbance. He had no significant past psychiatric, medical or surgical history. There was no significant drug history, substance abuse or family history of any disease. He had a fair socio-economic status and enjoyed good relation with colleagues at work. His pre morbid personality assessment showed him to be an optimistic person with a controlling and responsible attitude towards his family. He had average religious and moral values. Stress coping was fair. On physical examination his vital signs were normal and was alert with intact memory. Judgment and insight were impaired. Routine blood indices, blood glucose, liver functions, renal functions and electrolytes were normal. Platelet count was 170 x 10³. Serum dengue IgG tested positive but NS-1 antigen which was positive initially turned out to be negative. Blood test for

malarial parasite, HIV antibody, hepatitis B surface antigen and syphilis serology were negative. Magnetic resonance imaging of the brain showed no acute pathology. Electroencephalogram and electrocardiogram showed normal rhythms. Lumbar puncture excluded any infective or inflammatory etiology showing a normal cell count with normal proteins. Auto-immune encephalitis profile was also normal thus excluding limbic auto-immune encephalitis which is more likely to occur during post-infectious period. Arterial blood gases showed no abnormality. Patient was diagnosed to have acute psychosis secondary to dengue fever. He was started on intra-muscular haloperidol 10mg twice daily and promethazine 25mg twice daily. Intravenous diazepam 10mg was given twice daily as well. After 10 days he appeared to be communicative, cooperative and had an improved self-care. His medications were switched to oral haloperidol 10mg twice daily and oral procyclidine 5mg twice daily to prevent drug induced extra pyramidal side effects. After 3 weeks he was discharged and advised to continue anti-psychotics for one month. Over a two month follow up period his medications were slowly tapered off and had complete resolution of symptoms.

DISCUSSION:

As the number of cases of dengue are increasing different neuro-psychiatric manifestations have been published from different parts of the world. Due to lack of studies the exact incidence of neuro-psychiatric manifestations is uncertain. The psychiatric symptoms may present during acute phase of dengue fever or could be a late manifestation of the disease depending on the extent of cerebral involvement by the virus^[6]. Our patient had typical signs and symptoms of psychosis which developed two weeks succeeding dengue fever. Mania is the most common psychiatric manifestation reported after dengue followed by anxiety, depression and catatonia^[6]. The rapid resolution of psychotic symptoms in our patient explains the association of the early clearance of the dengue virus from the body. The patho-physiology behind neuro-psychiatric manifestations of dengue fever includes capillary leakage leading to fluid accumulation in the extra-vascular spaces and cerebral edema^[1,4]. Other possible mechanisms include systemic involvement of the virus or an immune-mediated response^[7]. Cytokines are also held responsible associated with anxiety and depression in dengue and hence can be hypothesized to be responsible for psychiatric symptoms in such patients^[8].

Our patient had no focal neurological deficit, normal brain imaging, normal cerebro spinal fluid examination and metabolic profile which excluded metabolic causes and underlying encephalitis. This concludes that the possibility of psychotic behavior in our patient was likely due to viral invasion of the brain. Many authors believe that the rarity of reporting psychiatric symptoms secondary to dengue infection are not due to lack of awareness of clinicians but due to the lack of clinical correlation and association between psychiatric disorders and dengue fever. These reports are explained as incidental co-occurrence, Thailand Thai Database where the highest incidence of dengue is reported in the world has no published report on either mania or psychosis amongst dengue patients^[9].

CONCLUSION:

The exact patho-physiology behind neuro-psychiatric manifestations of dengue fever still remains unclear. Literature on psychosis following dengue fever is sporadic with very few publications. Every patient coming from those areas where dengue is endemic and presenting with acute onset of psychotic disorder followed by fever should be screened for dengue. There is a dire need to study risk factors, prevalence and co-existing psychiatric disorders associated with it. Early recognition is important for appropriate treatment and family counseling about the likely temporary nature of the patient's symptoms.

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Waleed Shahzad; data collection, data analysis, manuscript writing, manuscript review

Omer Ismail Khalid; data collection, data analysis, manuscript writing, manuscript review

Neelam Sarwar; concept, data analysis, manuscript writing, manuscript review

Muhammad Hassan; data collection, data analysis, manuscript review

Tehmina Inayat; data collection, data analysis, manuscript review

Mazhar Badshah; data collection, data analysis, manuscript review