

Case Report

The Importance of Gathering a Thorough History: A Curious Case of Bilateral Upper Extremity Weakness

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Received: 02 June 2020; **Accepted:** 14 June 2020; **Published:** 20 June 2020

Citation: Brittany Hill, David Ennis. The Importance of Gathering a Thorough History: A Curious Case of Bilateral Upper Extremity Weakness. Archives of Microbiology & Immunology 4 (2020): 91-94.

Introduction

The ability to gather a thorough patient history originates during medical school and continues to develop during a physician's career. The standard questions outlined by medical schools often do not pinpoint the skills required to elicit usable information from a patient. It is noted from Hampton's studies that gathering a good history can commonly give physicians clues to the diagnosis [1, 2]. This information must be of equal contribution to the physical exam and laboratory findings. More recently, the importance of empathy and bedside manner have influenced the way medical history gathering is taught in medical school and residency programs [3, 4]. History from a patient can point a physician in the right direction

or help them narrow in on a specific diagnosis more quickly.

This case presents a lag in history finding due to the patient's misinterpretation of the question "Have you traveled recently?" While this question may seem straight forward, it is important to remember how patients may interpret what is being asked. Many times, this is not an aversion to cooperation, but rather lack of knowledge. It is important for physicians to understand nuances in the way history gathering questions are asked and learn to tailor these questions to ensure the most specific answer. Treatment was not withheld due to the misunderstanding of the question, but rather could have reduced the days to diagnosis.

Case

A 70-year-old female with history of hypertension, type II diabetes and hyperlipidemia who was admitted for left arm weakness, cough and fever. She was prescribed doxycycline for sinusitis after evaluation at an urgent care center four days prior to admission; her symptoms did not improve. Her grandchildren had recent viral gastroenteritis but there were no other significant sick contacts. She reported no new food exposures, no canned food exposures and no recent travel. There were no significant lab abnormalities on admission. Blood and urine cultures were negative. CT of the head was unremarkable for acute findings. On initial exam, she had no muscle tenderness, no ptosis, but did have mild speech slurring. Left upper extremity strength was 3/5, right upper extremity strength was 4/5 and bilateral lower extremity strength was 5/5. Sensation was intact. There was no disruption to upper motor neuron signs. No meningeal signs were present. Differential diagnosis included myasthenia gravis, multiple sclerosis, Guillen Barre Syndrome or other metabolic encephalopathy. Lumbar puncture (LP) was colorless with white blood cells of 76 per mm³, no red blood cells, total protein of 78 mg/dL, glucose of 70 mg/dL, lymphocyte predominance, and no xanthochromia. Cerebrospinal fluid (CSF) cultures and gram stain were negative. Cryptococcal antigen was negative. Influenza A and B were negative. Acetylcholine antibodies were negative. There were no oligoclonal bands in the CSF and IgG index was normal. An Arbovirus panel was dispatched.

Three days later she had flaccid paralysis of the bilateral upper extremities. Magnetic resonance imaging (MRI) of the brain showed a single tiny focus in the left occipital area and some minor chronic microangiopathy, which did not explain the symptomatology. Magnetic resonance angiogram (MRA) of the head was unremarkable. MRI of the cervical, thoracic and lumbar spine showed no evidence of cord compression or other significant

abnormality. The patient was seen by physical therapy, speech therapy and occupational therapy to assist with her weakness.

Upon further questioning on day five of the hospital course, the patient revealed that she and her husband had recently visited their summer lake house in Tennessee where they had spent many days sitting on their porch. She reported that she did not consider this trip as travel. She did not recall any mosquito bites, however admitted to not applying bug spray. On day eight of admission, IgM antibodies for West Nile Virus in the CSF resulted positive confirming the diagnosis of flaccid West Nile myelitis. The patient underwent fourteen days of inpatient rehab and regained full strength of the upper extremities.

Discussion

West Nile Virus, an enveloped positive single-stranded RNA flavivirus, is transmitted by mosquito bite. The virus replicates in dendritic cells and spreads to the lymphatics and the bloodstream. Presentation includes fever, headache, myalgias and sometimes a rash. Neuroinvasive disease is defined by the presentation of fever with meningitis or encephalitis and a spectrum of muscle weakness. Neuroinvasive disease occurs in less than 1% of patients with WNV [5]. While neuroinvasive disease related to West Nile Virus is rare, mortality is around 22% [5, 6]. The highest number of cases occur between July and September in South Dakota, Louisiana, Mississippi, California and Texas according to ArboNET, a data collection system that categorizes arbovirus illness [7]. Diagnosis can be made with IgM antibody capture enzyme-linked immunosorbent assay (MAC ELISA) or plaque reduction neutralization test (PRNT) [8]. Treatment is primarily supportive and one third of patients regain complete former functional status with utilization of physical therapy [9, 10].

The first case involving flaccid paralysis due to WNV in the United States was recorded in 2002 [11]. Since then, there have been reports ranging from asymmetric weakness of one extremity to extreme cases of progressive brachial diplegia [12]. When examining the pathophysiology of neuroinvasive disease it is significant to note that there is usually subacute involvement of the anterior horn cells [6]. This explains the paralysis symptoms that occur in many patients with neuroinvasive WNV. The mean age of flaccid paralysis seen in WNV is 61 years old with a majority of cases involving male patients [13]. Flaccid paralysis from WNV usually peaks at 24-48 hours after the presentation of symptoms which may take one to two weeks after exposure [12, 14]. This case was slightly outside the typical time course for symptom progression in addition to the patient being female. The case also represents a unique pattern of transmission as Tennessee happens to be one of the lowest rates of disease in the country.

Prognosis varies among patients with neuroinvasive disease. The most severe cases in which some functional status was regained took more than three months [12]. Physical rehabilitation has helped some patients but there seems to be no way to predict which patients will recover. In this case, the patient underwent four hours of rehabilitation daily for two weeks. Although supportive care is standard in WNV, it is always important to take a thorough history in order to determine if a patient's contribution can influence the diagnosis. Further development of history taking skills is important for all physicians regardless of their duration of practice.

The authors whose names are listed immediately below certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the

subject matter or materials discussed in this manuscript.

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