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Case Study

AN AVOIDABLE DEATH OF MENINGOENCEPHALITIS CHILD PATIENT

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ABSTRACT

The case study has been designed for a pediatric patient who passed away because of poor clinical and pharmaceutical care. The child belonged to Sahiwal and was suffering from meningoencephalitis that was not diagnosed appropriately by physicians in time. When the disease was diagnosed, the patient was in a deeply comatose state and was given supportive treatment of dopamine and dobutamine along with antibiotics but due to delay in diagnosis the patient could not survive. Encephalitis is a neurological dysfunction caused by the inflammation of brain parenchyma. The poverty in our country is the major cause of many deaths in hospitals. Due to lack of proper treatment and unavailability of required resources for proper treatment the patient passed away.

Keywords: Meningoencephalitis, Hydrocephalus, bacterial meningitis, dexamethasone, vancomycin, ceftriaxone, ambu bag, Ventilator

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INTRODUCTION

Encephalitis is defined as the neurological dysfunction caused by the inflammation of brain parenchyma that includes the infections of central nervous system (CNS) caused by many viruses, bacteria (especially *Mycoplasma pneumoniae*), fungi and parasites.^[1] The viruses causing encephalitis include Herpes simplex virus (HSV-1, HSV-2) and other herpes viruses are varicella zoster virus (VZV), Adenoviruses, Influenza, Enteroviruses. Encephalitis was initially reported in adults, but now it is being increasingly recognized in children.^[2] The differential diagnosis of acute encephalitis in children encompasses infectious, para-infectious, immune mediated, autoimmune, metabolic, vascular, neoplastic, paraneoplastic, and toxic aetiologies as well as brain dysfunction.^[3,4] Symptoms of Viral encephalitis are fever, headache, unconsciousness and seizures if antiviral therapy is not given in viral encephalitis such as herpes simplex virus encephalitis (HSE) then mortality is over 70%.^[5] *Bacterial meningitis* is the common form of meningitis. It is an inflammation of the pia and the arachnoid mater, with the invasion of bacteria into the subarachnoid space.^[6] Inflammatory activation of endothelial cells seems to be a prerequisite for bacterial invasion but also results in the regulation of adhesion molecules as ICAM-1.^[7] Presently 80 percent of all cases are of bacterial meningitis. Bacteria causing bacterial meningitis include *leptospira*, *mycoplasma* and *listeria*. The clinical presentation of bacterial meningitis include fever, malaise and headache; meningismus (neck stiffness), photophobia, vomiting and phonophobia^[8]. In bacterial meningitis highly effective antibiotics can kill bacteria efficiently but still mortality rates are up to 34%.^[9]

CASE PRESENTATION:

An eight (8) years old school going girl was apparently healthy, with no previous history of serious illness. She lived in Sahiwal. Suddenly one day she complained of headache, when she was going to school. Her mother did not notice. Next day she again complained of feeling headache when she was in school and had an attack of nausea and vomiting. Her mother took her to a physician. The physician prescribed her antiemetic medication. She got relieved by that medicine at that time. But again she had an attack of nausea and vomiting. Then after few days she had a complaint of Bell's

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palsy. They again took her to a physician who prescribed medicine but she was not relieved by medicine. Then after some days she had an attack of tonic clonic seizures and focal fits for three days involving left side of the body. Due to these seizures she was unable to walk. They took her to DHQ hospital Sahiwal, there she had again symptomatic treatment but actual disease was not diagnosed by the physicians. But when that patient was not relieved by any treatment and her condition became worse even after getting treatment, and then the parents took her to a senior physician. He examined her completely and told that the patient is in coma and referred the patient to DHQ hospital immediately. The patient was taken to DHQ Hospital again. The doctor examined her completely and took her CT scan

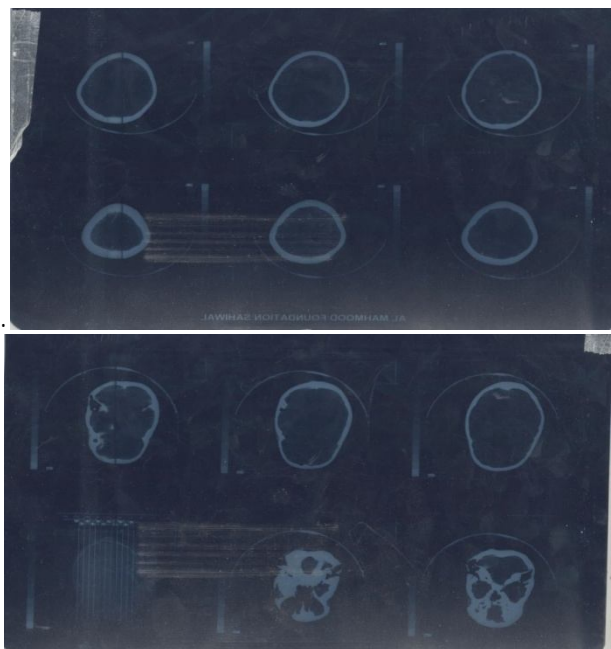


Figure 1. ST Scanning of patient

After seeing CT scan report the physician told the patient's family that the child had some sort of water in her brain (Hydrocephalus). The physician started her treatment with ceftriaxone injection 1g bid for just 1 day. The physician said you have to wait till Monday for neurologist because tomorrow is Sunday. Next day Sunday morning when no neurologist came to see the child, the parents took her to Children Hospital Lahore after realizing the serious condition of their daughter. The child was admitted to emergency department in the Children Hospital. But when the patient reached the hospital she became breathless. The physicians immediately gave artificial breathing to child via ambubag (manual resuscitator).

Condition of patient when she was admitted to Children Hospital:

The child was in deeply comatose state and was suffering from pulmonary arrest. Her Pulse rate was feeble, GCS was 4/15, CVS was S1+S2+0, Tone was decreased in all 4 limbs, Reflexes were diminished, BP was 70/40 mmHg, HR was 88/min and Pupils became dilated. So immediately ETT (endotracheal tube) passed to the patient and ambu bagging started. Along with it the patient was given ionotropic support with dopamine and dobutamine. The miserable condition in our country is its poverty. At that time no bed was available to the child. They shift her to another child's bed. One bed was shared by two children. Not only were these two children, many children were sharing beds. As the child was on ambu bagging, the patient was given artificial breath via ambu bag all the day and night. The patient was shifted to neuro ward next day. The Neuro Surgeons examined the patient

they told the patient's family about the disease of patient.

Treatment given to child in Neuro Ward:

Inotropic support (starting with dopamine 90mg+dobutamine 180 mg I/V in 50cc N/S 12hrly) then dopamine 180mg+dobutamine 360mg I/V in 50cc N/S 2ml/hr 12hrly, then next day dopamine 120mg+dobutamine 250mg I/V in 10cc N/S 8hrly, Ceftriaxone injection 1g bid for 5 days, Vancomycin(no dose mentioned in reports), Decadron(no dose mentioned in reports).The child remained on ambu bagging for five days because no ventilator was free in the hospital. She was not responding to any treatment. Her family searched ventilator in other hospitals like Ganga Ram Hospital and General Hospital Lahore but could not find any free ventilator. They also consulted to a Neuro Surgeon of General Hospital Lahore and showed the reports of the patient to the surgeon. The surgeon recommended brain surgery for the patient with cerebral stents. But the surgery could not be done because no empty ventilator was available in General Hospital at that time. Her condition was getting worse instead of improving. Her pupils were dilated and fixed. Her body became hypothermic. The child showed the symptoms of oliguria, foul breath, and papilledema and her all vital organs kidney, brain, liver stopped working but her heart was still beating. The physicians started counseling the parents that child had almost died, not responding to any treatment so you should stop ambu bagging but her family denied to do. Ultimately after five days the child heart stopped and she passed away.

DISCUSSION

The case study is about the patient whose disease cannot be diagnosed in time due to negligence of physicians. The initial symptoms of patient like continuous nausea, vomiting, headache, Bell's palsy, focal seizures and no response to any treatment was the evidence that the patient had some kind of serious underlying pathology. Microbiological testing is considered as key point to initiate antibiotic therapy. But no differential diagnosis was performed to identify whether meningitis was viral or bacterial. The major problem in our health care system is lack of basic facilities in our hospitals like medicines, beds, ventilators, etc. The therapeutic requirements are not been fulfilled throughout the Pakistan. Professional negligence, poor implementation of standard clinical regulations and clinical discrepancies lead to many deaths. The clinical practice actually needs the attention of judiciary, society and leadership to assure the safety of precious human life.^[10] Focal and generalised seizures are treated with anticonvulsants; IV fosphenytoin proves to be effective. In viral encephalitis intravenous acyclovir, a nucleoside analogue acyclovir, 10 mg/kg three times daily should be recommended and continued for 14 days and it must not be stopped until there is definite diagnosis is made otherwise it would be difficult to manage the disease.^[11] IV mannitol or steroids is recommended to treat raised intracranial pressure that is presented as papilloedema. If patient is unresponsive to any medicine then surgical decompression can be performed.^[12] To initiate treatment of meningitis cephalosporin group (e.g. ceftriaxone or cefotaxime) or group 4 (e.g. cefepime) are recommended. Vancomycin is effective against many bacteria that are not killed by other antibiotics.^[13] Guidelines recommend for routine treatment with dexamethasone for community-acquired meningitis of children (0.15mg/kg every 6 hours for 2–4 days), adults (10 mg every 6 hours for 4 days). First steroid dose should be administered 10–20 min before initiating antibiotic treatment, or at least concomitantly.

CONCLUSION:

Comprehensive assessment, appropriate diagnosis and evaluation of patient response to treatment may help to eradicate the disease. If the disease of child (meningoencephalitis) would be diagnosed by physicians in time then it may be possible that the disease could be treated and patient survives. But disease was diagnosed when the disease had spread to such an extent that patient went to deeply comatose state and had to lose her life. The poverty in our country is also a major cause of many deaths in hospitals. Due to lack of proper treatment and unavailability of required

resources for appropriate treatment lead to many deaths in our country.

RECOMMENDATIONS:

1. Physicians must not focus only on symptomatic treatment but they should try to find the underlying cause of the disease.
2. If the patient does not respond to treatment then physicians must carry out tests to identify underlying causative agent.
3. In patients suffering from meningitis a head elevation (30°) of the bed is mostly recommended.
4. In severe cases of meningitis ventilation is necessary to reduce brain swelling.
5. Corticosteroids are recommended to reduce meningeal inflammation in patients suffering from meningitis.
6. Acyclovir is effective in viral encephalitis but should be started immediately before coma develops because any delay in the treatment leads to severe consequences.
7. Antibiotic therapy in bacterial meningitis should be given according to the cultural results in order to provide highly effective treatment.
8. There must be a "check" between the physician and patient to make sure the right medication, right dose, right route at right time.

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