CASE REPORT

Surviving stroke in an Ebola Treatment Centre

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SUMMARY

A middle aged woman presented to an Ebola Treatment Centre in West Africa with a 4-day history of fever, fatigue, joint pain and vomiting. She tested positive for Ebola virus disease (EVD) and a standard treatment platform of care was started. On day 3 of her admission, she was found to have suffered a left-sided CVA of unknown aetiology. Treatment was largely supportive within a resource-constrained environment and the added layer of providing care with extensive personal protective equipment, and human resource and safety constraints. The patient was able to clear the EVD and did regain some functional use of her arm and leg. She was discharged on day 15 of her stay, as a survivor of both stroke and Ebola.

CASE PRESENTATION

This case is the first in the published literature describing limited resource stroke care in an Ebola Treatment Centre (ETC). With decreasing mortality rates from Ebola being reported in many centres, there needs to be an awareness of the needs and difficulties arising while treating for secondary causes of illness while working in a resource-constrained and Ebola setting.[1–3]

A 40–50-year-old woman attended a West African ETC in January 2015, following a 4-day history of fever, fatigue, joint pain and vomiting. She had no medical history and was not on any regular medication. She was tested and found positive for Ebola virus disease (EVD), and admitted to the ETC. On admission, her blood pressure (BP) was 148/98 mm Hg, heart rate 90 bpm and she had a respiratory rate of 30 breaths/min. She was started on intravenous fluid therapy of 5 L normal saline a day, broad spectrum antibiotics, multivitamins, zinc and symptomatic pain medication, as per the ETC protocol.

Over the next few days, she continued to be symptomatic of EVD, with fever, diarrhoea, severe fatigue and pain. Fluid replacement continued at a rate of 5 L for 24 h along with other medications. Over this time, her BP fluctuated between 124/81 mm Hg and a high of 157/90 mm Hg. White cell count and C reactive protein rose despite antibiotic therapy, but all other blood parameters improved.

At 10:00 on day 3 of admission, the patient was found to have a dense right hemiparesis. Power was 0/5 in right upper and lower limbs. She was noted to have a right hemianopia and possible mild dysphasia, though swallow appeared intact. Her vitals at this time showed a BP of 165/94 mm Hg, pulse of 110 bpm (regular) and O_2 saturations of 93%. A diagnosis was made of left-sided cerebrovascular accident (CVA) of unknown aetiology.

Over the next 3 days, she began to show some initial signs of improvement. Power in her right lower limb improved to 1/5 and she was able to move her toes. A catheter was inserted and staff members were educated in repositioning in order to maintain skin integrity and avoid pressure sores. BP remained elevated between 150 and 160 systolic. Blood tests continued to improve and, importantly, she received her first Ebola PCR negative result on day 5 of admission (patients required two consecutive negative results to be considered for discharge).

Physical improvement continued with daily rehabilitation from staff, and it was noted that the patient had improved balance and her ability to sit unsupported for increasing periods of time was noted as well. On day 7, she was able to stand and mobilise for a few steps with the assistance of three people. Importantly, she again tested negative for EVD on day 9 and planning for discharge was initiated. Her family was educated in how to assist with standing and transfer, and the patient was given simple exercises for continued rehabilitation. Her catheter was removed without complication, blood results had normalised and her BP was 125/75 mm Hg. She was provided with a mattress and commode, and referred to her local hospital for continued support. She was discharged from the ETC on day 15, a survivor of both Ebola and stroke.

As imaging and testing facilities were extremely limited in the setting of an ETC, the working diagnosis of left-sided CVA was based on clinical findings, with the exclusion of other diagnoses.

As no imaging was available, and on a background of viral haemorrhagic fever, it was decided that the risks of aspirin outweighed the benefits, and it was withheld.[4]

Physiotherapy and repositioning were carried out at two-hourly intervals to avoid pressure sores. This was difficult to maintain with the human resources available and within the constraints of the personal protective equipment (PPE).[5] Risks of a breach in the PPE were higher when dealing with a partially immobile patient.

Maintaining personal hygiene in an immobile patient was significantly more difficult. Even simple tasks such as diaper changing required increasing staffing levels. This was part of the rationale for catheter placement, as 24 h observation was not available in the ETC and the patient was unable to safely mobilise independently.

GLOBAL HEALTH PROBLEM LIST

1. The unknown clinical factors and lack of imaging resources

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2. Language differences and lack of human resources
3. Rehabilitation apparatus and knowledge can be limited
4. Provision of postdischarge care after closure of humanitarian facilities.

GLOBAL HEALTH PROBLEM ANALYSIS

A level 1 emergency environment with a pathogen such as Ebola is a difficult clinical environment to work in. To compound this picture, our case illustrates the stresses that are placed on an international work force when additional diagnoses are added to the primary diagnosis of EVD.

In this particular case, the clinical diagnosis of stroke could not be further broken down into either haemorrhagic or ischaemic due to the lack of imaging available in the facility. In addition, the unknown pathophysiology of EVD on stroke left the clinicians very wary of using aspirin if it was in fact a haemorrhagic bleed.

International emergency response teams must work with local staff to overcome linguistic barriers in a large number of global emergencies. In the particular case of ETCs, these basic linguistic differences can be exacerbated by the fact that healthcare workers lose the visual and auditory feedback of communication due to the extensive articles of PPE that they are wearing, which leave only the eyes visible to colleagues.

In emergencies such as this, the impetus and focus is on a single disease entity and 'crisis' that is to be addressed both clinically and politically. Resources for alternative, and perhaps just as important, diagnoses and treatments, can often not be considered in the planning of an emergency response; but in order to provide a holistic response, a higher level of importance should potentially be placed on preparing for a wider breadth of clinical response.

Patient's perspective

- Owing to language and speech issues related to the stroke our patient was unable to provide her perspective to this study.
- Main concerns voiced by her husband on discharge related to after-care and possible complications. He was concerned about the cost and location of further care as any ongoing care would be provided by the national government healthcare system, which, in a rural area, would not have extensive expertise in stroke care.

Learning points

- Clinical examination and diagnosis are essential when working in resource-limited settings.
- Good teamwork and communication can overcome the most difficult of barriers.
- Rehabilitation with good outcomes is possible even in very challenging environments.
- Ebola virus disease may contribute to ischaemic/embolic events, due to poorly understood coagulopathy processes.

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