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BLUF: There still remains a paucity of scientific studies with quality data to analyze the current EVD outbreak.

Clinical Question: Is EVD mortality related with older age, increased presentation time to hospital after symptom-onset, and an increased viral load?

Background: There is an ongoing EVD outbreak in West Africa by the Zaire strain, reported first to the WHO on March 21, 2014. It appears to have begun in SE Guinea, with rapid spread by infected travelers to Liberia and Sierra Leone. This would lead to the largest outbreak ever of EVD, involving Guinea, Sierra Leone, Liberia, Nigeria, Senegal, and Mali.

Conakry is the capital and largest city in Guinea with a population of 11 million. Care initially of EVD patients was limited to two sites, with one hospital focusing on healthcare workers who were infected nosocomially, and another stand-alone temporary site focusing on EVD set up by MSF and WHO with the support of the Guinean Ministry of Health.

Methods: Multicenter retrospective observational study of suspected and confirmed EVD cases from March 25 to April 26, 2014, in Conakry, Guinea. Data was comprised of written medical charts and due to retrospective nature of study, there was no standardization.

Analysis was performed with Student's t-test, Fisher's exact test, or Wilcoxon rank-sum test to determine variables associated with mortality (age, sex, occupation, presence of GI hemorrhage, days to presentation, viral load). Kaplan-Meier and log-rank tests were also used for survival curves, with subsequent univariate analysis to determine mortality with above variables. Multivariate Poisson regression analysis was used to investigate questions of mortality association with older age, increased presentation time, and viral load.

Results/Conclusions: Only 80 patients studied, with 37 being positively confirmed for EBV. Most common transmission routes from most to lesser were household (62%), healthcare/nosocomial (38%), funeral ceremonies (16%). Presenting symptoms included fever (84% with mean temp 38.6C), fatigue (65%), diarrhea (62%), vomiting (57%), and anorexia (43%). Common signs included elevated heart rate (mean HR 93 with SBP 125) and hiccups (28% of patients). Mean time to seek treatment after symptoms was 5 days and time to death from symptom onset for nonsurvivors was 8 days.

PO fluids given to 97% of patients and 76% received IV fluids. Median of 1L IV fluids administered in first 24hrs. Antibiotics were given to all patients with GI symptoms. 19% were given malarial treatment, of which over half had *P.falciparum*.

The availability of lab testing in the facilities was not constant throughout the study period. As such, the authors highlighted the case of one patient who had AKI (Cr 13.9) with metabolic acidosis (pH 7.2, lactate 7.4) who improved with 5L IVF resus per day for 3 days; plus the case of a second patient with Cr 4.9 who improved with 4L IVF + K per day for 3 days.

Of those who died (43%), hemorrhage was seen in 51% of cases mostly from GI sources. Median age was 45 compared to survivors (median age 29). Patients 40 and above were found to have an increased risk of death.

Discussion: This study, as discussed at conference, is fraught with pitfalls. It has limited power and an absence of appropriate medical information. That said, there are snippets of information that seem to correlate with what has been seen in the past; namely, common presentation included fever/vomiting/diarrhea/volume depletion, those with the highest viral loads were least likely to survive, and older age having worse outcome.

The two main treatment centers were helpful in data acquisition, however I wonder if the two facilities (one government, the other by international organizations) provided the same level of care. One interesting note is that this study alludes to the fact that there was more emphasis on treating, rehydration, and interventions compared to prior outbreaks. They also attempted early empiric malarial treatment if diagnostic studies were not available in a timely manner and early broad-spectrum antibiotics for sepsis, but were not able to appropriately standardize or track interventions given.

To their credit, they do attempt to discuss the spread of EVD in an urban setting, and highlight the transmission of EVD nosocomially. Infection control is emphasized as well as the importance of provider monitoring considering working conditions with bulky, non-breathable PPE. This concurrently influences the care given to patients in an inverse manner.

In a study such as this, it is very easy to cherry-pick those points that support the common narrative and to ignore or brush aside information that simply does not fit with what we know. This study showed that although older age predicted worse outcome, the mean age of nonsurvivors as compared to other studies was lower; this could be due to the limited power of the study. Also, the overall mortality was 43% as compared to two other studies which showed a mortality of 70%; this study again was underpowered whereas the other study had thousands of data points. Finally, although they suggested that higher viral load presentation led to worse outcome, after correcting for age and presentation time, this was shown to be insignificant. This study in no way should be considered the landmark study for our current EVD outbreak but should be considered as another data point, albeit a weaker one. Sometimes, not sharing results is better than sharing poor data.

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