

EBOLA HEMMORHAGIC FEVER- PROBABLE MULTIDIMENSIONAL AYURVEDIC CORELATION

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ABSTRACT

EHF is believed to occur after an Ebola virus is transmitted to an initial human by contact with an infected animal's body fluids. Human-to-human transmission can occur via direct contact with blood or bodily fluids from an infected person. The onset of illness is abrupt and is characterized by fever, headache, joint and muscle aches, sore throat, difficulty in breathing, swallowing, hiccups, and weakness, followed by diarrhea, vomiting, and stomach pain. More severe symptoms, such as—Coagulopathy with thrombocytopenia, leading to bleeding from the nasal or oral cavities, along with hemorrhagic skin blisters. Bleeding into the skin may create petechiae, purpura, ecchymoses, and hematomas. Development of renal failure leading to multisystem organ failure and leads to death. Various concepts are dealt in *Ayurveda* which is applicable in different conditions. Among those concepts there are some of the concepts which are related to disease aspects as well. Few of the concepts relevant in this context are: *SankramikaRogaNidana*, *NidanarthakaraRoga*, *Raktapitta*, *EkadashaRupiRajayakshma*, *RaktastiviSannipataJwara*, *DhatugataJwara*. Ebola Hemorrhagic fever conceptually can be related to *VyadhiSankara*. Mode of Transmission of Ebola Hemorrhagic fever can be related to *SankramikaRogaNidana*. Mode of progress of disease can be related to *dhatugataJwarain Rasa-Asthi- Rakta- ShukraGataJwarasequence* and *NidanaArthakaraRoga*. Considering signs and symptoms of Ebola Hemorrhagic fever it can be related to acute exaggeration of *EkadashaRupiRajayakshma*, *Raktapittadifferent types* and *RaktastiviSannipataJwara*. Concept mentioned in *Ayurveda*- If a disease is caused due to strong or many etiological factors and the signs and symptoms are fully and severely manifested then it will lead to loss of consciousness, orientation and kill the patient can be related to severity, fatality of Ebola Hemorrhagic fever.

Key words: Ebola, *Sankramana*, *Lakshana*, *Ayurveda*.

INTRODUCTION

Ebola hemorrhagic fever (EHF) is a severe, often-fatal disease in humans and nonhuman primates (monkeys, gorillas, and chimpanzees) that has appeared sporadically since its initial recognition in 1976. The disease is caused by infection with Ebola virus, named after a river in the Democratic Republic of the Congo (formerly Zaire) in Africa, where it was first recognized. The virus is one of two members of a family of

RNA viruses called the Filoviridae. There are five identified subtypes of Ebola virus. Four of the five have caused disease in humans: Ebola-Zaire, Ebola-Sudan, Ebola-Ivory Coast and Ebola-Bundibugyo. The fifth, Ebola-Reston, has caused disease in nonhuman primates, but not in humans.[1]

The exact origin, locations, and natural habitat (known as the "natural reservoir") of Ebola virus remain unknown. However, on

the basis of available evidence and the nature of similar viruses, researchers believe that the virus is zoonotic (animal-borne) with four of the five subtypes occurring in an animal host native to Africa. A similar host, most likely in the Philippines, is probably associated with the Ebola-Reston subtype, which was isolated from infected cynomolgous monkeys that were imported to the United States and Italy from the Philippines. The virus is not known to be native to other continents, such as North America.[2]

Confirmed cases of Ebola hemorrhagic fever have been reported in the Democratic Republic of the Congo, Gabon, Sudan, the Ivory Coast, Uganda, and the Republic of the Congo. No case of the disease in humans has ever been reported in the United States. Ebola-Reston virus caused severe illness and death in monkeys imported to research facilities in the United States and Italy from the Philippines; during these outbreaks, several research workers became infected with the virus, but did not become ill. Ebola hemorrhagic fever typically appears in sporadic outbreaks, usually spread within a health-care setting (a situation known as amplification). It is likely that sporadic, isolated cases occur as well, but go unrecognized. Previous Ebola outbreaks have seen fatality rates as high as 90%. [3]

Mode of transmission of Ebola Hemorrhagic Fever

EHF is believed to occur after an Ebola virus is transmitted to an initial human by contact with an infected animal's body fluids. Human-to-human transmission can occur via direct contact with blood or bodily fluids from an infected person (including embalming of an infected dead person) or by contact with contaminated medical equipment, par-

ticularly needles and syringes. Semen is infectious in survivors for up to 50 days. Transmission through oral exposure and through conjunctiva exposure is likely.

Ebola virus incubates in infected humans for 2-21 days, with the majority of patients becoming symptomatic after 8-9 days. Once infected, patients can experience severe symptoms within 1-2 days.[4]

Early signs and symptoms of Ebola Hemorrhagic Fever

The onset of illness is abrupt and is characterized by fever, headache, joint and muscle aches, sore throat, difficulty in breathing, swallowing, hiccups and weakness, followed by diarrhea, vomiting, and stomach pain.[5]

Second stage signs and symptoms of Ebola Hemorrhagic Fever

More severe symptoms, such as - Coagulopathy with thrombocytopenia, can develop in as soon as 24-48 hours, leading to bleeding from the nasal or oral cavities, along with hemorrhagic skin blisters. Bleeding into the skin may create petechiae, purpura, ecchymoses, and hematomas (especially around needle injection sites). Heavy bleeding is rare and is usually confined to the gastrointestinal tract.[6]

Late stage of Ebola Hemorrhagic Fever

The development of renal failure, leading to multisystem organ failure along with disseminated intravascular coagulation, can then rapidly ensue over 3-5 days, along with significant volume loss. Patients who develop a fulminant course often die within 8-9 days. Those who survive beyond 2 weeks have a better prognosis for survival.

In general, the development of bleeding symptoms often indicates a worse prognosis and this blood loss can result in death. All people infected show some symptoms of circulatory system involvement, including impaired blood clotting. If the infected per-

son does not recover, death due to multiple organ dysfunction syndrome occurs within 7 to 16 days (usually between days 8 and 9) after first symptoms. Patients who develop a fulminant course often die within 8-9 days. Those who survive beyond 2 weeks have a better prognosis for survival.[7]

Ayurveda: *Ayurveda* is considered as the science of life. In the history of *Ayurveda* it is mentioned that *PunarvasuAtreyata* taught the knowledge of *Ayurveda* to his six disciples. Among them *Agnivesha* composed a treatise known as *AgniveshaTantra* which is later recomposed by *Charaka* and popularly known as *CharakaSamhita*. It is being told that whatever is there in this *Samhita* is everywhere and at the same time what is not there in this *Samhita* is not found elsewhere.[8]

The knowledge of other *Tantras* is a mere waste if he has not studied *SushrutaSamhita*, at the same time who has not gone through *CharakaSamhita* cannot be a successful *Vaidya* (physician). It refers that to become a *UttamaVaidya* one should be well versed in all disciplines of *Ayurveda*. [9] Various concepts are dealt in *Ayurveda* which is applicable in different conditions. Among those concepts there are some of the concepts which are related to disease aspects as well. Few of the concepts relevant in this context are mentioned below:

Many diseases may have one common manifestation; like *Jwara* is the common manifestation seen in many diseases. Many diseases have many manifestations; like other features than *Jwara*, in this example. One disease may have one manifestation like in *JwaraShareeraManaTapa* might be the only manifestation. One disease may have many manifestations like other *Linga* and *Upadrava* in case of *Jwara*. This concept of *Ayurveda* is considered as *VyadhiSankara*. [10]

The same concept can be applied in case of etiological factors. Many etiological factors can cause one disease or can cause many diseases; one etiological factor may cause one disease or may cause many diseases. This concept of *Ayurveda* is considered as *Hetusankara*. [11]

Sexual Intercourse, close body contact, via breathe, via various bodily secretions, by using clothings, utilization of sitting, sleeping place of diseased person all these are the etiological factors for *SankramikaRoga* like *Kusta*, *Jwara*, *Sosha*, *Netrabhishyanda*. [12] The concept of *Janapadodwamsa* also should be considered via *Jala*, *Desha*, *Kala* factors.

The concept of *NidanaArthakarRoga* is a unique concept of *Ayurveda*. For example- *Jwara* will lead to the disease *Raktapitta*, *Raktapitta* may lead to *Jwara* and it may lead to *Sosha* and finally death. [13]

In *RasagataJwara* features like pyrexia, Myalgia, excessive yawning may be present. In *AsthidhatugataJwara* there will be body pain, restlessness, breathing difficulty. In *RaktadhatugataJwara* features like petechie, excessive thirst, hemoptysis, burning sensation, discolouration, impaired orientation and consciousness etc are seen. [14]

Raktapitta is a disease in which blood will be coming from external orifices. In case of *UrdwagaRaktapitta* blood comes out from mouth, eyes etc. In *AdhogaRaktapitta* blood comes out through *Guda*, *Mutramarga*. In *TiryagataRaktapitta* blood tends to come out of *Romakupa*. [15]

The features of *EkadashaRupiRajayakshma* features are – heaviness in head, soar throat, cough, breathing difficulty, diarrhea, back-pain, myalgia, tastelessness, sputum, hemoptysis. [16]

In *RaktaStiviSannipaJwara* features like blood coming out of mouth fever, vomiting, excessive thirst, confusion, pain, loose motion, hiccup, distention of abdomen, giddiness, burning sensation in eyes, breathing difficulty, unconsciousness, blackish red discoloration of tongue with petechie.[17]

If a disease is caused due to strong or many etiological factors and the signs and symptoms are fully and severely manifested then it will lead to loss of consciousness, orientation and kill the patient.[18]

If the *DoshicJwara* is being manifested with all its features as mentioned then it will kill the individual in seven, ten, twelve days in case of *Vataja*, *Pittaja*, *KaphajaJwara* respectively and the major features observed will be inappropriate talking, giddiness, breathing difficulty respectively.[19]

AIMS & OBJECTIVES

To critically analyze the concepts of *Ayurveda* in relation to ebola hemorrhagic fever.

MATERIALS & METHODS

The Ebola hemorrhagic fever was studied from modern medical text books and from internet sources. Later the *BruhatTrayi* and other classical text books of *Ayurveda* were scrutinised regarding the references for the various disease conditions and various concepts regarding disease. Later, supportive correlation was done between *Ayurvedic* and modern views to build valid and reliable hypothesis regarding the concepts of *Ayurveda* in relation to ebola hemorrhagic fever.

DISCUSSION

Conceptual: In Ebola hemorrhagic fever initially there will be symptoms of fever followed by coagulopathy, later will cause superseded bacterial etc infections multiple organ failure and death. Conceptually this can be related to the concept of *Vyadhisankara* of *Ayurveda*. One disease may have

one manifestation like in *Jwara-Shareera, ManaTapa* might be the only manifestation. One disease may have many manifestations like other *Linga* and *Upadrava* in case of *Jwara*.

Mode of Transmission:

Human-to-human transmission can occur via direct contact with blood or bodily fluids from an infected person (including embalming of an infected dead person) or by contact with contaminated medical equipment, particularly needles and syringes. This can be related to *SankramikaRogaNidana* - Sexual Intercourse, close body contact, via breathe, via various bodily secretions, by using clothings, utilization of sitting, sleeping place of diseased person all these are the etiological factors for *SankramikaRoga* like *Kusta, Jwara, Sosha, Netrabhishyanda*.

Mode of Progress of disease:

The onset of illness is abrupt and is characterized by fever, headache, joint and muscle aches, sore throat, difficulty in breathing, swallowing, hiccups, and weakness, followed by diarrhea, vomiting, and stomach pain. More severe symptoms, such as - Coagulopathy with thrombocytopenia, can develop in as soon as 24-48 hours, leading to bleeding from the nasal or oral cavities, along with hemorrhagic skin blisters. Bleeding into the skin may create petechiae, purpura, ecchymoses, and hematomas. Development of renal failure leading to multisystem organ failure and leads to death. The first stage signs and symptoms can be related to *RasagataJwara* and *AsthigataJwaraLakshana*. The second stage signs and symptoms can be related to *RaktagataJwaraLakshana*. Last stage where death occurs can be related to *ShukragataJwaraLakshana*.

The other concept which can be related to mode of progress of Ebola hemorrhagic fever

er is the concept of *NidanaArthakaraRoga*. Considering the progress of the disease it can be related to *NidanaRogaKaratva* of *Rakta-Pitta* to *Jwara* or viceversa leading to *Sosha* and then *Marana*.

Signs and symptoms of disease:

Even though if a disease is chronic in nature, if the Hetu(etiological factor) is Balavan then VyadhiBala will be Balavan leading to acute exaggeration of features rather than chronic; Yakshma is considered as Rogasamuha(group of diseases). Considering all the signs and symptoms of the Ebola hemorrhagic fever and the above two aspects it can be considered as the state of *EkadashaRupiRajayakshma* with acute exacerbation.

Considering one of the major sign i.e. bleeding from orifices and petechie it can be related to *Ubhayaga* and *TiryagaRaktapitta* as per the condition.

It can be also related to *RaktaStiviSannipajwara* - features like blood coming out of mouth fever, vomiting, excessive thirst, confusion, pain, loose motion, hiccup, distention of abdomen, giddiness, burning sensation in eyes, breathing difficulty, unconsciousness, blackish red discoloration of tongue with petechie will be present and the same features are even seen in Ebola hemorrhagic fever.

Fatality-Prognosis:

Ebola hemorrhagic fever outbreaks are having the fatality rates of 90%. Those who survive beyond 2 weeks have a better prognosis for survival. This two aspects of Ebola hemorrhagic fever can be related to following concept mentioned in *Ayurveda*- If a disease is caused due to strong or many etiological factors and the signs and symptoms are fully and severely manifested then it will lead to loss of consciousness, orientation and kill the patient. The concept of *Janapa-*

dodwamsa also should be considered via *Jala, Desha, Kala* factors

CONCLUSION

Ayurveda is considered as the science of life. It is being told that whatever is there in this *Samhita* is everywhere and at the same time what is not there in this *Samhitais* not found elsewhere. Various concepts are dealt in *Ayurveda* which is applicable in different conditions. Among those concepts there are some of the concepts which are related to disease aspects as well. Few of the concepts relevant in this context are: *San-kramikaRogaNidana*, *NidanarthakaraRoga*, *Raktapitta*, *EkadashaRupiRajayakshma*, *RaktastiviSannipataJwara*, *DhatugataJwara*. Ebola Hemorrhagic fever conceptually can be related to *VyadhiSankara*. Mode of Transmission of Ebola Hemorrhagic fever can be related to *SankramikaRogaNidana*. Mode of progress of disease can be related to *dhatugataJwarain Rasa-Asthi- Rakta-ShukraGataJwarasequence* and *NidanaArthakaraRoga*. Considering signs and symptoms of Ebola Hemorrhagic fever it can be related to acute exaggeration of *EkadashaRupiRajayakshma*, *Raktapittadifferent types* and *RaktastiviSannipataJwara*. Concept mentioned in *Ayurveda*- If a disease is caused due to strong or many etiological factors and the signs and symptoms are fully and severely manifested then it will lead to loss of consciousness, orientation and kill the patient can be related to severity, fatality of Ebola Hemorrhagic fever. Even the concept of *Janapadodwamsa* can be considered in this context

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