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CRIMEAN- CONGO HAEMORRHAGIC FEVER;
A SURVEY OF CASES OF (CCHF] IN BALOCHISTAN

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ABSTRACT... gspirkani@vahoo.com. Crimean- Congo Haemorrhagic Fever (CCHF) is a zoonotic disease caused by the bite of infected ticks, widely distributed in Asia and endemic in northern and western areas of Pakistan, In Pakistan first human outbreak reported from Rawalpindi in 1976. In Balochistan first outbreak occurred in 1987. Since than every year outbreaks of CCHF occur in northern parts of Balochistan. We are reporting our experience in detail, of these outbreaks and information about clinical picture, treatment ant preventive measures for CCHF cases.

INTRODUCTION

Crimean- Congo Haemorrhagic Fever (CCHF) is a zoonotic disease caused by Nairovirus. The disease in man occur by the bite of infected tick mostly Hyalomma marginatum, or by direct contact with blood or body fluids of CCHF patient, The virus is widely distributed in eastern Europe, Asia and Africa1. Cattle, sheep and small mammals such as hare serves as host of the vector. The disease is characterized by febrile illness with headache, myalgia and petechial rash which is usually followed by bleeding and necrotic hepatitis.

Crimean- Congo Haemorrhagic Fever (CCHF) was first observed in the Crimea by Russian scientists in 1994. An identical virus named as Congo virus was isolated from a blood of child in Kisangani city of Congo in 1956. The virus was first isolated in laboratory hosts, namely mice in 1967. Casals showed that the virus isolated in cases of Crimean hemorrhagic fever and the Congo virus were serologically indistinguishable. Therefore the common name of Crimean- Congo Haemorrhagic Fever (CCHF) was used for the disease[2].

ETIOLOGY

The virus has been classified as Nairovirus in the genus Bunyavirus in the family of Bunyaviridae. Nairovirus contains 32 viruses arranged in 7 serogroups on basis of antigenic affinities.

CCHF virus, Hazara virus from Pakistan and Khasan virus from former Soviet Union form one sero- group3'4'5. Nairovirus are spherical, 90-120 nm in diameter and have host cell derived bilipid layer envelope incorporated virus- coded glycoprotein spikes. It has three -segmented, single stranded RNA genome which is in the negative

sense. The viral glycoproteins are believed to be responsible for recognition of receptor site on susceptible cells and manifestation of viral hemagglutinability and for protective immune response in the host.

STABILITY

Being enveloped, the virus is sensitive to lipid solvents. It is labile in infected tissues after death presumably due to a fall in pH, but infectivity retained for few days at ambient temperature in suspected serum for 3 weeks at 4 C. Infectivity is stable at temperature below 60 C but is destroyed by boiling or autoclave.

PATHOGENESIS

The mechanism of pathogenesis by CCHF is not known but due to analogy to other arthropod born viruses it is suggested that liver is target organ for this virus. Capillary fragility is a feature of the disease. There is evidence of the formation of circulating immune complexes with activation of complement and this would contribute to damage of the capillary bed and hence to the genesis of skin rash and renal and pulmonary failure. Endothelial damage would lead to platelet aggregation and de-granulation. Tissue damage in organs such as liver would result in further release of procoagulants in to the blood stream and the impairment of the circulation through the occurrence of disseminated intra vascular coagulopathy would in turn contribute to further tissue damage[4].

CLINICAL PICTURE

The infection is usually transmitted to man by bite of a tick, but an increasing number of cases have occurred among the medical and nursing staff caring for patients in hospital and in laboratory personal carrying investigations of these patients. The incubation period is 2 to 7 days. The onset of the illness is sudden with fever, chills, severe muscular pains, headache, vomiting and pain in epigastric and lumbar region. A hemorrhagic state develops from 3rd to the 5th day and manifestations like petechial hemorrhage or purpura in the skin and bleeding from mucous membranes manifest as epistaxis, hemoptysis, hematemesis, melena and hematuria.

At this stage the conjunctive are injected, the face is flushed and tongue is dry, often coated with dry blood. The pulse is slow in the beginning but with continuing loss of blood becomes fast, the blood pressure drops and heart sounds become weak, clear signs of impending shock and vascular collapse. The liver is enlarged and tender and there is tenderness over the epigastrium and splenic region, in fatal cases death from massive hemorrhage and cardiac arrest occur usually 7-9 days after onset of the illness[4].

PATHOLOGY

During first few days of illness in human includes leukocytosis or leucopenia and elevated aspartate transaminase, alanine transaminase, gamma gluamyl transferase, alkaline phosphatase levels. While creatinine, bilirubin and urea level increase in second week, thrombocytopenia, elevation of prothrombin ratio activated partial prothromboplastin time, thrombin time and fibrin degradation products and production of fibrinogen and hemoglobin values are evident from few days of illness, indicating that the occurrence of DIG is probably an early and central event in pathogenesis of the disease,

DIAGNOSIS

The diagnosis is suggested on clinical grounds when the patient has a history of tick bite or exposure to tick environment, or contact with CCHF patient. After an incubation period of 2-7 days develops an illness of sudden onset of muscle pains, headache fever and developing hemorrhagic state; bleeding from mucous membrane and petechiae in the skin associated with thrombocytopenia and leucopoenia.

The diagnosis may be confirmed in the laboratory by mice inoculation with patient blood. After one week the virus can be identified by immunofluorescent test. The antibodies has been detected from patients and their contacts. Both IgM and IgG antibodies can be detected in the laboratory from serum by ELISA method. PCR is also a new diagnostic tool for diagnosis of CCHF. We received result of 33 serum analysis of CCHF positive patients in 2004. Five were positive for IgM antibodies, 9 for IgG antibodies while 13 were diagnosed by PCR, which indicates that PCR is the most sensitive test for diagnosis of CCHF.

TREATMENT

Some patients from Balochistan also referred to Agha Khan University Hospital Karachi where they were treated. The experience at Agha Khan University Hospital shows that three cases of CCHF were treated successfully with oral ribavarin 4g/day for four days, than 2.4 g/day for six days. The patients became afibrile, and their hematological and biochemical abnormalities returned to normal within 48 hours. All made complete recovery, and developed IgM and IgG antibodies to CCHF virus. It is recommended that it a contact or caring worker of s CCHF patient develops fever with chills and body aches, he should start ribavirin 2g stat loading dose and than 1 g/day 6 hourly for 4 days and 500 mg/ day 6 hourly for other 6 days7. (total treatment time 10 days)

PROGNOSIS

The mortality rate is approximately 30%(range 20-50%). but this can be reduced considerably by careful monitoring of patients and application of appropriate blood products replacement therapy.

EPIDEMIOLOGY

The CCHF antibodies has been demonstrated in former Soviet Union, Balgaria, Greece, Hungary, former Yugosalavia, France, Portugal, Kuwait, Dhubai, Sharjah, Iraq, Afghanistan, Pakistan. India, China, Egypt, Sudan, Ethiopia, Mauritania, Senegal, Liberia, Burkina Faso, Congo, Cameron, Nigeria. Zaire, Kenya Tanzania and South Africa[5'6'7'8'9].

In Pakistan the disease was first recognized in 1976, when a iaparotomy was performed on a patient with abdominal pain, hematemesis and melena. The deaths occurred including the surgeon operating on patient and an attendant of operation theatre. While eleven persons were found infected[3].

In Balochistan also a young surgeon was the first victim of this disease, who expired after operating on a CCHF patient in 1987. Similarly two other surgeons and one operation theatre worker infected while operating on a patient in a private hospital of Quetta city. Patient died after laparotomy but both surgeons and OT worker survived7. In 1995 and 1998 few cases reported from Kohlu . In 1 999 an outbreak of CCHF occurred in Loralai district of Balochistan. In 2000 ten patients infected with Congo virus in Sibi area out of them four patients died (mortality 40%). Another severe outbreak reported from Loralai district in which 13 patients died including two paramedics attending the patients in Divisional Head Quarter Hospital Loralai. Twenty six blood samples of these area collected nine were positive for CCHF antibodies.

Table-l. CCHF cases in Balochistan since year 2000.

Year	Cases	Deaths
2000	40	18(45%)
2001	75	18(24%)
2002	70	15(21.4%)
2003	66	15(22.7%)
2004	60	19(31.66%)

In November 2000 fourcases of CCHF reported in Police Training School Quetta and one patient died. In 2001 a ENT surgeon contracted CCHF in Chaman Hospital while attending a nomad lady with epistaxis who came from Afghanistan. The surgeon survived but his attendant who contracted disease from surgeon died. After 2001 " the hospital staff and surgeons became conscious of this killer disease and no more health care worker become victim of this disease. There is a need for public awareness about this disease for better control of the disease.

PREVENTION

The key to the prevention of CCHF is avoiding direct contact with blood and body fluids of CCHF patient. The1 health workers should practice barrier nursing of patient.The used articles must be disinfected and burned. The" patient should not be touched without gloves and other bio-safety measures to be observed. Veterinary workers and animal bearers should avoid direct killing of ticks, due to risk of aerosol infection from blood of infected tick. It is better to put the tick in kerosene oil which kills it[10'1]1.; Our experience in Loralai and Khanozai outbreak show that if the close contacts of patients take ribavirin prophylactically, it can prevent the illness. In Loralai outbreak out of nine seropositive close contact persons six were symptom free and only three were developed symptoms.

CONCLUSION

CCHF is zoonotic disease which is endemically present in northern In Balochistan, every year outbreaks are occurring. The surgeons operating on suspected patients must be cautious. The health care workers and nurses should observe barrier nursing methods and avoid direct contact with blood and body fluidsof such patients. Some awareness programmes about CCHF in health care workers resulted in fall of cases in health workers but still there is a need of public awareness to control the disease in this region. PCR has proved to be the best diagnostic tool. The facilities for PCR diagnosis of CCHF must be available in the country. Ticks which act as vectors must be killed animal bearer persons must be educated about this killer disease.

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