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A REVIEW ON MONKEY B VIRUS [HERPES B VIRUS]

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ABSTRACT

Monkey B Virus (Herpes b virus) is a rare Endemic infection caused by the herpes virus through saliva, feces, urine, brain & spinal cord tissue of the infected adult macaque monkeys.[1] Nearly 50 cases have been reported in which 21of them are died with this virus. It includes the flu like symptoms at the initial stage and neural damage in the progression of infection. The diagnostic tests include both serological & Virological. The treatment for Monkey B virus include first aid treatment and anti viral therapy and no vaccine is available for this B virus.

KEYWORDS: Herpes B virus, Herpes simiae, Encephalomyelitis, Macaque monkey.

SYNONYMS[2]

•Simian B virus infection.
•Herpes virus simiae B virus.
•Herpes simiae Encephalomyelitis.
•Cercopithecine herpes virus.

INTRODUCTION

Monkey B virus is an Extremely rare infection caused by the type herpes B virus present in the macaque monkeys is transmitted from the infected macaque monkeys through their saliva, feces, urine, brain or Spinal code tissues. It is characterized by viral invasion of the brain & its meninges and also effects the spinal cord called as 'Encephalomyelitis'

HERPES B VIRUS

GENUS - simplex virus.[3]
SUB FAMILY - Alpha herpes virus
•It is a type of a herpes virus carried by adult macaque monkeys, also includes rheusus macaques, Pig-tailed macaques, Cynomolgus monkeys (crab eating or long tailed macaques) the virus mainly present in monkeys central nervous system (CNS), tissues, Saliva and also in cell cultures. The virus survive up to 7 days at 37°c or for weeks at 4°C and it is stable at 70°c. The virus Survive for hours in the surfaces of the objects.

BACKGROUND[4]

> First case was reported in 1982 by a monkey handler.
> In1973, approximately 17 cases were reported.
> 1987 a 4 more cases were reported including human to human transmission
>1997 a researcher died from B Virus infection.
> Nearly 50% of cases have been documented, 21 of them are died.
> Only one case is reported the spreading of B virus from infected person to other person.[5]

EPIDEMIOLOGY

•B virus is an Endemic with nearly 70% mortality rate.[6]
•large colonies of macaque monkeys seen in parks in Florida and puerto vico.

CAUSES

- Mainly caused by the herpes virus simiae [B Virus] a type of herpes virus which is highly prevalent (Enzootic) among macaque monkey, other primates such as chimpanzees and capuchin monkeys[7] can also infected with B virus but there is no documented cases of spreading the virus through primates.
- In humans, the infection is caused the contact with the Saliva, tissue cultures, urine, feces of the infected monkey.

TRANSMISSION

•B Virus mainly transmit from infected macaque monkeys to people are the common source of transmission of virus to people.
•Transmission mainly occurs, by the bites or Scratches of the infected macaque monkeys.
•B Virus transmitted through saliva, feces, urine, nervous system of an injected macaque monkeys.
•Can also transmit from needle stick from a contaminated Syringe.[8]
•Scratch or cut by person on a contaminated Cage or other sharp edged Surface exposed with virus.

SIGNS AND SYMPTOMS

- Symptoms start within 1 month of being Exposed to B virus, but could appear in as 3-7 days.
The Initial Symptoms are flu like Symptoms such as

- Fever and chills
- Muscle ache
- Malaise
- Fatigue & headache.
- Stiff neck and back.[9]
- Small blisters develop at the site of wound.

other Symptoms Such as Shortness of breath, Nausea, Abdominal Pain, Hiccups, lymphadenitis, lymphagities.

At the disease progression Stage the virus Spreads Cause infection to brain and Spinal cord which leads to

•Neurologic and inflammatory symptoms such as pain, numbness, Itching near the site of wound.
•Muscle coordination problems (Ataxia)
•Brain damage.
•Severe damage to Nervous system [neuromuscular dysfunction].[10]
•Coma and Death.

PEOPLE AT RISK OF INFECTION

- Lab workers.
- Veterinarians.
- other people who are exposed to infected Macaque monkeys or their specimens.

DIAGNOSIS

specimen collection

Collection of Samples from infected person[11]

•Samples are collected from the infected person for PCR testing to detect the presence of Herpes B virus.
•Samples should not to be collected from the people at the time of exposure because that may cause wound more infectious by forcing the virus more deep into the wound.
•Samples for testing should be collected only if the Symptoms appear.

Collection of Sample from associated monkey

- Saliva of monkey is collected to determine the presence of Herpes B virus by PCR.
- Serum sample is also collected to determine whether the monkey is Seropositive or not.
- False positives and False negative results may occur because Herpes simplex virus and B virus are members of the Same family alpha herpesvirdae hence produce antibodies response to cross reactivity.

TESTS

1. Direct culture

Direct culture of B virus is the Standard test for diagnosis of infection but requires biosafety level 4 (BSL-4) to reduce the risk of exposure, for laboratory workers.

2. Serological methods

Serological methods are Substantially for Specificities of B Virus but the assays obtains weeks after the possible Exposure which is not useful for making decisions about treatment.

3. PCR test

PCR is more rapid and provide results within hours, but Sample collection is delayed until appear of Symptoms.

TREATMENT

Treatment includes

•First Aid treatment
•Antiviral medications

First Aid treatment

First Aid treatment was start immediately after the patient exposed to a macaque monkey.

Treatment includes

- wash the wound gently thoroughly with soap, detergent or iodine for 15 min & then run water over the wound for 15-20 minutes or more.

ANTIVIRAL THERAPY

To implement the Antiviral treatment, the following criteria should be taken into considerations.

1. Type and Physical conditions of implicated Animal

- Macaque monkeys are the only sources to B virus infection. B virus infection is mainly spread by the monkey with wounds consist with B virus infection [fluid filled blisters on skin] and immunocompressed are likelier to excrete virus.

2. Thoroughness and timeliness of wound cleaning procedure[12]

- Wounds which are cleansed within 5 min to Exposure and irrigant for atleast 15 min are less likely to be infection.
- Delay in cleansing, irrigating of wounds Increases the risk of infection.

3. Nature of wound

Bites or Scratches which breaks the skin are with higher risk than the Superficial wounds.
- Wounds to head, neck or torso are rapidly effect the CNS which are considered with higher risk.

4. Exposure of materials which are in contact with macaques monkeys

- Needle sticks, Syringes which are contact with monkey are at higher risk of infection.
- Punctures from needles which are contact with blood of macaques, scratches from animal Cages are at low risk for infection.

By the above, the known risk of Exposure should de be monitored and treatment is implemented to patient.

RECOMMENDATIONS OF TREATMENT[13]

Treatment is recommended the following

•Skin or mucosal Exposure with or without the injury.
•Inadequate cleaning or irrigating of wounds.
•Laceration of the head, neck.
•Deep puncture bite.
•Needle sticks, puncture of laceration with objects infected macaques.

•A culture taken from the wound which is positive for B virus.

PROPHYLAXIS TREATMENT
Valocyclovir - 1gm by mouth Every 8 hrs for 14 days.
Acyclovir 800 mg by mouth 5 times daily for 14 days.

Treatment [13]
with absence of CNS Symptoms
Acyclovir - 12.5-15 mg/kg - IV - Every 8hrs.
Ganciclovir - 5 mg/kg IV Every 12 hrs. [14]

with CNS Symptoms
Ganciclovir - 5 mg/kg IV Every 12 hrs.

Prevention
•There are no vaccines for B virus infection.
•To reduce the risk of Exposure.
•Standard Universal precautions used for human blood borne pathogens such as maintaining personal protective equipment.

Safe work practices such are
•Minimization of Exposure to hazards.
•Education or training of personal.

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