

Chickenpox Outbreak in United Nations Military Troops in Liberia

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Abstract

Objectives: To study chickenpox outbreak in United Nations military troops of different ethnic groups coming from endemic areas of chickenpox.

Methods: during the period from December 2003 to May 2004, a total of 14 patients with query chickenpox were admitted to the military hospital. The criteria for admission were: the severity of symptoms, poor accommodation facilities, time of arrival to mission area and climatic factors. The diagnosis of this disease was made clinically using these criteria: generalized vesiculo-pustular rash, fever, itching and other prodromal symptoms. The distribution of patients according to home country was made.

Results: All of the fourteen patients were males and their age group ranged from 25-44 years. Seven patients (50%) were from Bangladesh, five (36%) from Namibia, one from Pakistan and one from Nepal. Seven patients had extensive rash, high fever and poor accommodation facilities. Hospitalization period ranged from: 5-10 days, with an average of seven days.

Conclusion: Although chickenpox is a common and trivial disease in childhood where more than 90% of cases occurred before the age of 10 years, still there are many cases which are seen in adulthood with a more complicated and serious course. Hospitalization of the patients is necessary to break the infectivity cycle and to reduce the risk of complications. Early introduction of antiviral agents is recommended.

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Chickenpox, adults, peacekeeping missions, military troops, United Nations.

Introduction

Varicella Zoster Virus (VZV) is a human herpes virus causing Chickenpox. VZV is an enveloped double stranded DNA virus. This virus is sensitive to inhibition by acyclovir, and other related drugs.

In the United States and other temperate climates 90-95%¹ acquired varicella occurs in childhood. The disease is self-limiting and treated symptomatically. In adults, a high risk of complication such as varicella pneumonia, encephalitis, hepatitis etc, necessitate early and prompt treatment with acyclovir or other related drugs.

Our hospital is a military field hospital serving in Liberia, a tropical country with hot humid dry winter and hot summer lies on the West African coast.

The hospital is a part of the United Nations peace keeping missions, serving military troops from various countries.

Methods

During a period of 6 months, we diagnosed 14 patients of military troops that visited our hospital. Chickenpox diagnosis was made depending on clinical base. Ethnically, the patients from Bangaldish, Namibia, Pakistan, and Nepal.

The criteria for admission were: severity of the symptoms, the duration of the symptoms, arrival to mission area, poor accommodation facilities at their unit, the age of the patients and the climatic factors of hot humid weather.

The patients were mainly presented with the following clinical features, vesiculo-pustular skin lesions, itching and fever.

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Complete thorough history and physical examination were performed for each patient, available laboratory test including: blood test (WBC, PCV), liver function tests (SGOT, SGPT), kidney function tests (BUN, Creatinine), urine analysis, and chest X-ray were done.

The patients received acyclovir either orally or intravenous, antibiotics were given when necessary in addition to the other soothing lotion, antipyretics and antihistamines. Participants received instructions to increase their fluid intake, keep low profile (avoid direct contact with others), avoid direct sun exposure and not to pick the dry scab (dry lesion). Follow up visit after two weeks to insure complete cure was advised.

Results

All participants were males; their age ranged from 25-44 years, the diagnosis of chickenpox was made in all patients on clinical grounds. The observed clinical symptoms upon admission are seen in table (1). As shown in table (2), half of the patients were from Bangladesh.

Table 1: shows the symptoms and their percentages.

Symptoms	Number of patients	Percentage
Vesiclo-pustular rash	14	100%
Fever	12	86%
Pruritus	10	72%
Prodromal symptoms	9	64%
Chest discomfort	2	14%
Eye swelling	1	7%

Table 2: shows distribution of patients according to home country.

Country	Number of patients	Percentage
Bangladesh	7	50%
Namibia	5	36%
Pakistan	1	7%
Nepal	1	7%

Duration between arrival to mission area and appearance of clinical symptoms varied from less than one week to more than four weeks, as shown in table (3).

Table 3: The duration between arrival of the patient to the mission and appearance of symptoms.

Duration	Frequency	Percentage
<1 week	4	29%
1-2 weeks	3	21%
2-3 weeks	1	7%
3-4 weeks	0	0%
>4 weeks	6	43%

The eight patients, who had less than three weeks in mission area, were Bangali and Pakistani. While those who had more than 4 weeks in the mission area were the Namibian and the Nepali patients.

Two of the patients presented to the military hospital after 4 days of extensive skin rash with fever, two had chest discomfort with no physical findings, and one of the patients had bilateral eye swelling. All Laboratory findings were within normal except for two patients who had 2 folds elevated liver enzymes (SGOT, SGPT), and chest X-rays were normal for all patients.

Seven patients were hospitalized, for an average of 7 days. Two patients received acyclovir intravenously, 10 mg/kg, three times daily for 7 days two patients for 3 days and continued with oral acyclovir 800 mg five times daily for the other 5 days, and the other two patients were given acyclovir orally in the same dose for 7 days. Five of the 7 unhospitalized patients, were given acyclovir orally 800 mg five times daily for seven days, the other two patients were given acyclovir 20mg/kg 4 times daily for 5 days as they were presented within the first 24 hours.

All patients were given oral antibiotic in form of cephalexin 500 mg four times daily for an average of seven days, two of the hospitalized patients were given ceftriaxone (3rd generation cephalosprin) for 3 days and continued orally with the same oral antibiotic.

None of the patients had serious complications apart from expected elevated liver enzymes in 2 patients (SGPT 74, 79mmol/dl. SGOT 69, 61 mmol/dl) and these enzymes returned to normal before discharge. Our observation at the 2 weeks follow up visit revealed that, the black people had more accentuated post inflammatory hyper pigmentation especially those who had had extensive rash.

Discussion

Chickenpox (primary varicella) is usually considered a mild disease in children, but in adults it can be a far more serious. Military troops who have never had chickenpox in their childhood are always at high risk to get infection either from roommate where they live in groups, or during their duty where they are in contact with children who are believed to be the most important source of infection. To decrease the chance of spreading the disease, hospitalization and isolation were advised whenever possible. For unclear reasons, there is a difference in the epidemiology of varicella between temperate and tropical climates where the climate plays an important role. In temperate climate, chickenpox is still a disease of childhood while in tropical climates more cases occur in older age groups.³

Varicella infection in adults is usually more severe than in children with more skin lesion presented (fig1), and more prominent, prolonged fever and constitutional symptoms.⁴ Two of our patients had fever for 5 days after the initiation of therapy. It is known that, varicella pneumonia is a frequent complication (1/400) with 10% mortality in healthy adults and 30% in immuno-compromised adults.⁴ Given such serious risk, the third generation cephalosporin as well as acyclovir even when they had an unremarkable chest finding.

As indicated in table (2), fifty percent of our patients were from Bangladesh that is an overcrowded country (>125 million population with nearly 131,000 km square area)⁵ where they expected to acquire the infection in early childhood. The same condition was valid for the Pakistani and Nepali patients. So why did those patients escape exposure to primary varicella in their childhood? Probably they were in remote areas. While the Namibian patients were from a low-density tropical country (2 million

population with 825,000 square km),⁵ so they had less chance to contact with chickenpox patients in their early childhood.

Table (3) shows that 8 participants (Bangali, Pakistani) had been less than three weeks in mission area and the shortest duration was 2 days i.e. the first case started from back home where he had contact with a child with primary varicella, consecutively the cases started after with documented contact between soldiers, and the same applied for the Pakistani patient (his child back home had chickenpox), and he has been in mission area for 13 days, which is within the incubation period of the disease where it is usually 14-17 days with range 9-23 days.⁶

Those who had more than 4 weeks in mission area (Namibian, Nepali) had contacts with locals as they work in police stations and live in crowded areas. There was no contact between different nationalities simply because they serve in different areas.

Considering that anyone with chickenpox who is over 16 years should be treated with acyclovir within the first 72 hours of presentation.⁷ We started all patients on acyclovir orally or intravenous according to the severity of symptoms, and we extended the treatment duration for ten days for two patients with extensive rash and high fever to decrease the risk of possible complications of and/or bacterial super infection and CNS complications (encephalitis, meningitis, etc).⁴

Regarding patients who were treated as out patients (2 patients) we gave them oral acyclovir in the dose of 20mg/kg four times daily for 5 days, because they presented within the first 24 hours, where this dose proved to decrease the severity of illness in immune-competent adults.⁸ We insured adequate hydration of all patients especially those who were given intravenous acyclovir to avoid the risk of reversible renal impairment due to acyclovir crystalline nephropathy.⁹

Fortunately, the only expected complication we had, was the 2-fold elevation of liver enzymes in two patients. They got back to normal on discharge. On follow up visits we insured the smooth recovery with accentuation of post-inflammatory hyper-pigmentation

in black patients.

The currently available varicella vaccine is a live attenuated OKA strain vaccine, which was introduced in 1995. It is a safe and effective vaccine and recent data indicate that varicella vaccine effectiveness was more than 95% in preventing the disease and around 100% for preventing moderate and severe disease if it is given within 36 hours to susceptible persons.¹⁰ So we believe that the addition of this vaccine to other recommended vaccines for unvaccinated military personnel and health workers at risk of getting varicella is essential.



Figure 1: Varicella infection in adults.

Conclusion

Although primary infection of varicella zoster virus is usually mild and self-limited in immunocompetent children, occasionally it can result in significant morbidity with more serious complications in adolescent, adults, and immunocompromised patients.

Early treatment with antiviral agents is essential in the adults to prevent or decrease the risks of complication and to reduce the severity of the disease.

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