

CLINICAL FEATURES, COMPLICATIONS AND TREATMENT RESULTS OF VARICELLA ZOSTER VIRUS IN BACHMAI HOSPITAL

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Summary

Objectives: Describing clinical features, complications and evaluation of treatment results caused by Varicella Zoster Virus (VZV) at Bachmai Hospital from January 1, 2018 to December 31 2019. **Subjects and methods:** retrospective study. 67 patients Admitted at Bachmai Hospital, having real-time PCR - VZV with positive test result and VZV - IGM positive diagnostic serum test. **Results:** Among 67 cases of VZV disease, the majority were females, accounting for 61.2%, the median age was 29 years old, 56.7% had background disease, of which 16.4% of systemic lupus erythematosus, 4.5% cancer. There are 64.2% of cases remember not being vaccinated. Only 3.0% remember having had chickenpox before. The disease caused by VZV is clinically diverse, 70.1% (47 cases) showed chickenpox disease, 25.37% (17 cases) showed water burn injury in the shingles scene and 4.5 % (3 cases) showed meningitis with no burn lesions on the skin. Uncomplicated chickenpox 29.8%, complications of chickenpox commonly encountered dermatitis and soft tissue 19.4%, complications of meningitis combined with cord paralysis 7 or common in shingles scene. As a result of treatment, 86.6% (58 cases) had no sequelae, 3.0% (2 cases) had no sequelae of consciousness disorder, and up to 10.4% (7 cases). Consolidation) serious request for return, death is recorded. **Conclusion:** Disease caused by VZV in people with underlying systemic lupus erythematosus, cancer or pregnant women. The clinical picture is diverse, has many complications on the research group and high mortality.

Key words: Varicella Zoster virus, Herpes Zoster, chickenpox, shingles, Bachmai.

INTRODUCTION

Infections by VZV cause two clinical scenarios. Primary infection with VZV is chickenpox disease, clinically described as acute fever, multi - age burns lesions are more concentrated on the face and body. No viral particles are produced during this stage and no apparent lesions have occurred. Reactivation of the virus leads to the virus multiplying and causes shingles^[1]. The clinical course of shingles is neuralgia and a blistering rash that is clustered in place and usually only on one side of the body^[2]. A com-

bination of 130 studies from 26 countries showed that the rate of shingles infection ranged from 3 to 5/1000 people in North America, Europe and Asia - Pacific. The rate of hospitalization due to this disease is 2 to 25 per 100,000 people^[3]. Chickenpox is usually mild, benign, and spontaneously stable, but may increase complications in immunocompromised sites, infants and pregnant women^[4]. Complications of shingles include neuralgia, myelitis, cranial nerve palsy, meningitis, stroke, retinitis and gastrointestinal infections such as ulcers, pancreatitis, and hepatitis^[1]. Shingles is a significant global health burden that is expected to increase as the population ages^[3]. Bachmai Hospital is a special general hospital, regularly receiving patients infected with VZV infection in many different specialties, on different sites. Patients admitted to Bachmai Hospital with chickenpox, shingles or with severe complications of the disease and some cases died in the

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disease caused by VZV. Therefore, we conduct this research with the aim of: describing some of the clinical features, complications and outcomes of VZV disease. To help clinicians have an overview, early diagnosis and timely treatment of diseases caused by VZV.

SUBJECTS AND METHODS

Subjects: 67 patients Admitted at Bachmai Hospital, having realtime PCR - VZV with positive test result and VZV - IGM positive diagnostic serum test.

Exclusion criteria: positive PCR test results with many virus agents.

Methods: A retrospectively cross sectional research.

Research sample: convenient research samples. During research process, there were 67 samples from medical records.

Research time and location: The research was carried out at Bachmai Hospital from 01/01/2018 to 31/12/2019.

Research tools and data collection: Research tools: PCR - VZV test on BIO - RAD CFX96 Realtime System and serum diagnosis VZV - IgM by Elisa method on Virion/Serion at Microbiology Department, Bachmai Hospital. Data collection tools: utilizing medical records sample.

Data collection process: Establishing lists of patients with positive Realtime PCR - VZV or positive serum diagnosis VZV - IGM. Establishing medical records research. Accessing to data from medical records to medical record research.

Data analysis: collected data will be classied, analysed by SPSS 22.0.

RESULTS

From 01/01/2018 to 31/12/2019 at Bachmai Hospital, the researcher collected 67 qualified - research samples.

Table 1. Common features of the research group

Age	Median (n)	29
	Min (n)	14
	Max (n)	88
Gender	Male [n (%)]	26 (38.8%)
	Female [n (%)]	41 (61.2%)
Background disease or atopic history	No background disease [n (%)]	29 (43.3%)
	Systemic Lupus Erythematosus [n (%)]	11 (16.4%)
	Cancer [n (%)]	3 (4.5%)
	Pregnant [n (%)]	5 (7.5%)
	Other(s) [n (%)]	19 (28.4%)
Vaccination history	Yes [n (%)]	3 (4.5%)
	No [n (%)]	43 (64.2%)
	No recollection or information [n (%)]	21 (31.3%)

Comments: Research group age: the youngest was 14 and oldest was 88, Median was 29. Research group age meets the majority of female patients with VZV: 61.2 %. 56 patients (56.7%) were pregnant with different background diseases, 11 patients (6.4%) with systemic Lupus Erythematosus, 3 patients (3%) with cancer.

Only 3 patients (4.5%) with chickenpox vaccination, 64 patients (95.5%) are neither vaccinated nor left with vaccination medical records.

Table 2. Clinical features of the research group

Features		N	%
Fever	Yes	49	73.1
	No	18	26.9
Rash	No	3	4.5
	Whole body	47	70.1
	Spots	17	25.4
Burning pain	Yes	17	25.4
	No	50	74.6
Tiredness	Yes	60	89.5
	No	4	6.0
	No description	3	4.5
Sore throat	Yes	34	50.7
	No	17	25.4
	No description	16	23.9
Cough	Yes	24	35.8
	No	30	44.8
	No description	13	19.4

Comments: There were 73.1% of cases reported to had fever, 3 (4.5%) In the absence of rash, the remaining 64 (95.5%) had rash, of which 47 (70.1%) cases of a systemic rash. There were 17 (25.4%) cases of burning pain and these 17 cases were diagnosed patients with shingles, and all chickenpox cases were not burning in the lesions. 60 (89.6%) of cases showing clinical signs of fatigue. 34 (50.7%) felt sore throat and 24 (35.8%) had cough.

Table 3. Clinical features of VZV

Features		N	%
Chickenpox		47	70.1
	No complications	20	29.8
	Skin, soft tissue complications	13	19.4
	Pneumonia	2	3.0
	Meningitis, encephalitis	1	1.5
	Combination of complications	11	16.4
Shingles		17	25.4
	No complications	1	1.5
	Meningitis	7	10.4
	Meningitis and Bell's palsy	8	12.0
	Meningitis/ bacterial sepsis	1	1.5
Solely Meningitis	3	4.5	

There were 70.1% of cases of VZV infection causing chickenpox, of which chickenpox with soft tissue skin complications accounts for not a small rate, pneumonia in chickenpox were only 2 cases but up to 16.4% had combinations of 2 or more complications such as multi-organ failure sepsis or pneumonia, encephalitis, meningitis. 25.4% of cases with shingles and tuberculosis showed meningitis combined with peripheral Bell's palsy, the remaining 4, 5 cases had only meningitis with no rash lesions.

Treatment results of 67 patients with VZV.

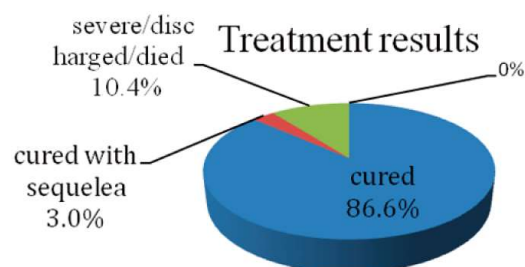


Figure 1. Treatment results of 67 patients with VZV

The majority of patients (86.6%) were cured, 10.4% with severe conditions get discharged from hospitals and/or died in hospital.

DISCUSSION

67 VZV patients in this research are adolescents or adults, mainly females (61.2%), aging around 29 years old, the youngest is 14 and the oldest is 88. Small children and teenagers are more prone to have chickenpox. Babies under 6 months are less likely to have chickenpox due to their mother's immune system. People have fewer chances of having chickenpox when they get older. Patients, from the age of 50, are more likely to have VZV in shingles: 20% with people aged 50 - 59, and 40% with 60 - year - old people. This explains the reason why our age span ranges from 14 to 88. People under 14 are not selected in this research maybe because they receive mainly outpatient treatment or have rather transparent clinical diseases. 56.7% of cases have background diseases as systematic lupus erythematosus, cancer or pregnant. This research shows that people can be severely affected by chickenpox are infants (less than 28 days old), expectants, people with ill immune system. Organ injuries can be chickenpox pneumonia, encephalitis, meningitis, hepati-

tis. Patients with chickenpox have immune deficiency and more likely to have complications (30 - 50%), with long recovery (3 times longer than normal clinical situation), considerable death toll (15%) when they do not receive intensive care. Frequent complication is pneumonia. Expectants with chickenpox are more likely to have pneumonia, babies may be born underweight. Shingles also increases complications on these people. Only 4.5% of cases are reported with certainty to be vaccinated, the remaining do not remember or have not been vaccinated with chickenpox. Our research is consistent with a number of other studies and this is a fact that the vaccination rate in Vietnam is below 5%. The reason chickenpox is one of the 10 most common infectious diseases in Vietnam, while shingles is still a burden in Vietnam and other countries in the world.

It is clinically noted that only 4.5% had no rash lesions, the remaining 95.5% had rash lesions in the form of scald, the rash was in whole body in 47 cases of chickenpox and the rash was localized with 17 diagnosed case of shingles. Our research is consistent with other studies showing that clinical VZV infection often has common rash. Other research found concomitant symptoms included irritability, fever and tiredness, and the illness usually lasted about a week. Complications include bacterial superinfection of the skin, encephalitis and pneumonia^[5]. However, this study had 3 cases with no rash. Burning pain appears in all 17 cases of shingles, while the rash of chickenpox does not have this symptom. This is completely consistent with many other studies. The pain ranges from mild to extremely severe and can be very debilitating, especially for old people. It can last for a year or longer. Pain is often described as throbbing, hot, or shooting pain^[5,6]. This can be explained in the primary infection where there are no viral particles and no obvious nerve damage. Reactivation of the virus leads to viral replication, causing shingles in the tissues involved in the nerve cells involved, inflammation, and cell death leading to prolonged neuralgia^[3,4,5,6].

The main clinical scenes of chickenpox disease was 70.1%, shingles was 25.4%, and 4.5%(3) of cases hospitalized in Pediatrics Department of Bachmai Hospital with absolutely no symptoms of rash of VZV, that is primarily headache, and manifestations of clear water meningitis.

All three of these cases were initially treated as meningitis and confirmed by Realtime PCR - VZV in fluid cerebrospinal. In which uncomplicated chickenpox accounted for 20/47 (42.6%) of cases, and complicated chickenpox accounted for the majority. Our research has a higher complication rate than others with benign diseases, usually stabilizes on its own and only about 1% have complications. Our research is in line with other studies that have found severe and even fatal VZV infection, often occurring in patients with immune deficiency caused by diseases or drugs such as corticosteroids or cancer chemotherapy^[5]. But it is lower than the research in 2018 of Vietnam National Children's Hospital with 142 cases of chickenpox hospitalized for treatment, there were 109 (76.8%) complications^[7]. Common complications in the chickenpox group are also dermatitis and soft tissue (13/47 cases), pneumonia (2/47 cases), and a combination of complications (11/47 cases).

In the combination group of complications, there were 6 cases of multi - organ failure, blood clotting disorders, the remaining were respiratory failure pneumonia combined with brain damage or pancreatitis, soft tissue inflammation. A 3 - year study in hospitalized chickenpox cases found that pneumonia caused by VZV was 28.4%, skin infection (25.4%), blood infection (10.7%), encephalitis/meningitis brain (8.8%). ARDS acute respiratory failure syndrome (6.8%), acute renal failure 2.9% and acute liver failure (1.9%)^[4]. Research by Le HuuManh, 109 cases of chickenpox with complications lying in treatment at the National Children's Hospital with the most common complications are superinfection dermatitis, soft inflammation with 95 patients (87.2%), 16 diseases patients with pneumonia (14.7%), 5 patients with encephalitis (4.6%) and two cases died^[7].

In our research, in the shingles group only one case with good eyes, all cases had meningeal damage or brain damage associated with or not with peripheral Bell's palsy, symptoms of vasculitis, retinitis, and myelitis were not noted. The reason for this may be that our patient population is not large enough to represent the possible complications of VZV. As a result, 86.6% of the cure cases did not leave any serious sequelae, our research was lower than some other studies. Research by Nguyen Van Thanh

had a cure rate of 88.2%, a relief of 11.8%, and no death^[8]. The rate of morbidity and mortality in ours (10.4%) was much higher than that of others and these 7 severe cases of death were in chickenpox (7/47) with two variables. Another study in the UK on this mortality complication group was only 6/112 (5.3%) of the cases^[4]. A meta - analysis from 1996 to 2011 of 2334 chickenpox - related deaths found the mortality rates vary with age. In children under 1 year old, the death rate from chickenpox reached 3.2/100,000/year. In children 1 year old 4 years old, the death rate from chickenpox reached 1.64/100,000/year. The average annual mortality for chickenpox in Brazil was 0.88/100,000 for children under 1 year and 0.40/100,000 for children 1 year^[9]. The explanation for such a high rate of morbidity and mortality is because it is caused by VZV in immunocompromised sites (systemic lupus erythematosus, cancer), in pregnant women. Bachmai Hospital is also a terminal hospital, where serious patients are gathered, so this mortality rate is much higher than the death rate in the community or other hospitals.

CONCLUSION

In conclusion, through the 2 - year review of 2018 - 2019, there was a total of 67 inpatient hospital admissions and diagnosed diseases caused by VZV, most of the patients had background diseases of systemic lupus erythematosus, cancer or were pregnant. The most common symptom was a blistering rash that can be generalized or spotted, painful in all patients with shingles and no patients with chickenpox. Clinical situations are diverse, the most common was soft tissue inflammatory chickenpox and especially 11 cases of combination of 2 complications, the most common complication of shingles was meningitis combined with peripheral Bell's palsy and 3 cases no rash lesions or burning pain that manifests itself as meningitis. The rate of serious requirement for return and death in the research group was high at 10.4%, the rate of sequelae was 3.0% and from 86.6% of cases. It is necessary to have longitudinal research on clinical assessment, complications, and treatment outcomes on each target group to have a suitable prevention strategy for each target group in Vietnam.

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