



Peculiarities on the clinical course of chickenpox in the unvaccinated population of Georgia

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Abstract

Background

Chickenpox, caused by the varicella-zoster virus (VZV), is a common childhood illness characterized by fever and a rash of itchy, fluid-filled blisters. The virus spreads easily from person to person through respiratory droplets or contact with the fluid from the blisters.

Materials and Methods

This is a retrospective study. We studied the medical records of patients hospitalized with the diagnosis of chickenpox in V.Bochorishvili Clinic. The materials were obtained via statistical analysis program-SPSS 21.0

Results

A study was conducted on 42 patients diagnosed with chickenpox, examining various aspects of the disease and its complications. Among the patients, 10 developed cellulitis caused by Streptococcus, while 7 experienced pneumonias worsening their condition. Additionally, 2 patients suffered from cerebellitis and 2 others developed shingles three months after the initial infection.

Conclusion

In the current unvaccinated population, there is a resurgence in chickenpox outbreaks which are accompanied by common complications.

Keywords: Chicken pox, Children, Cellulitis, Complications, Group A β -hemolytic streptococcus

Background

Chickenpox, caused by the varicella-zoster virus (VZV), is a common childhood illness characterized by fever and a rash of itchy, fluid-filled blisters. The virus spreads easily from person to person through respiratory droplets or contact with the fluid from the blisters. Before the availability of vaccines, chickenpox was nearly universal in childhood. Vaccination has significantly reduced the incidence of chickenpox and its complications. Chickenpox may take 10 to 21 days to develop. Chickenpox is contagious for 1 to 2 days before the appearance of the rash and until the blisters have dried and become scabs which usually takes about 5-7 days. After an incubation period of about 2 weeks starts the onset of the rash roughly on the 6th day. Macule is observed on the first day, followed by papule which is succeeded by vesicle and then crust formation (see image 3). This then leads to the emergence of a polymorphonuclear rash. In our study the patients exhibited very intense polymorphonuclear rash. In the past chickenpox vaccine was not included in the national immunization schedule of Georgia.

Materials and Methods

We retrospectively collected data from the medical records of patients hospitalized in V.Bochorishvili Clinic where majority of the patients were admitted due to superinfection with Group A β -hemolytic streptococcus. Materials were obtained by Physical examination of the characteristic itchy red rashes found all over the body along with the presence of fever. Laboratory tests were conducted in all the patients to check the CBC, Liver function tests were done to check for AST, ALT and X-rays were conducted.

Results

A study was conducted on 42 patients diagnosed with chickenpox, examining various aspects of the disease and its complications. Among the patients, 10 developed cellulitis caused by Streptococcus, while 7 experienced pneumonias worsening their condition. Additionally, 2 patients suffered from cerebellitis and 2 others developed shingles three months after the initial infection (see fig.1).

The age of the patients ranged from 4 months to 11 years, with an average age of 4 years. Chickenpox is typically known to follow a seasonal pattern, with the highest occurrence in late winter and early spring. However, in our study, 70% of cases occurred during the summer, indicating a deviation from the usual seasonal trend, presumably influenced by the COVID-19 pandemic.

Patients were admitted in the clinic within a timeframe of 1 to 30 days through the course of the disease. In uncomplicated cases, the average hospital stay was 3-4 days in 58.3% of the patients, whereas complicated cases required longer hospitalization

Fever was the initial symptom for all hospitalized patients, starting with subfebrile temperatures and progressing to fever during the rash period. Patients who experienced recurrent fevers during the convalescence period were more likely to develop complications. The most common complication observed during this phase was cellulitis, affecting various body parts.

A cluster of ten patients developed severe complications following an initial period of apparent improvement (5-10 days post-acute phase). These patients presented with recurrent fevers, indicative of a secondary infection. Notably, cellulitis, a potentially life-threatening soft tissue infection, was observed in all 10 individuals. This incidence of cellulitis is significantly higher compared to previous years, suggesting an underlying cause. Further investigation revealed the circulation of an aggressive strain of Group A β -haemolytic streptococcus during this period. Superinfection with this bacterium in immunocompromised chickenpox patients likely exacerbated their clinical course. However, no specific localization pattern for cellulitis was identified. In our studies 2 patients had facial rashes, 1 patient had rashes on the neck, 3 patients had rashes on the groin, 2 patients had rashes on the extremities and 2 patients had rashes on the abdomen. These findings highlight the potential for severe complications arising from bacterial superinfection in chickenpox patients, particularly during outbreaks of virulent pathogens. (See images 1,2,4)

Cellulitis severity depended on the affected area, fever, and overall intoxication level. Treatment primarily involved antibiotics, with surgical interventions necessary in 8 out of 10 cases for pus drainage and stabilization of the patient's condition.

Pneumonia was another complication which was encountered, 7 patients had developed pneumonia with 2 patients exhibiting a viral case occurring during the acute phase, whereas 5 patients exhibited secondary bacterial pneumonia manifesting around two weeks after the rash. Pleuropneumonia, diagnosed in one patient, required treatment in the Paediatric Intensive Care Unit (PICU) due to its severity.

Cerebellitis occurs when the virus breaches the blood-brain barrier and damages the central nervous system (CNS). Two patients, aged 4 and 6, presented with cerebellitis. Symptoms manifested after a 12-day period, this was characterized primarily by broad-based gait, disturbance, slurred speech, dysmetria. Prompt treatment was administered to the 2 patients spanning a duration of about two weeks leading to their subsequent recovery.

Zoster was manifested in 2 patients as Shingles. One child, aged 6, exhibited a unilateral rash along the dermatomal distribution of the right side extending from the nipple to the back, corresponding to the affected nerve. This presentation occurred without fever. At 2 months of age, the child experienced a mild episode of chickenpox which he contracted from his father, while the mother remained asymptomatic. Despite a lack of severe symptoms, the child subsequently developed shingles at 6 months of age. The second child aged 9 years, contracted chickenpox at 4 months of age. Subsequently, at the age of 9, the child presented with manifestations of shingles. For both cases diagnosis was done by swab test of the vesicles (varicella zoster rt-pcr) which came back positive.



Image 1



Image 2



Image 3



Image 4

Conclusion

In the current unvaccinated population, there is a resurgence in chickenpox outbreaks which are accompanied by common complications. Among these complications, cellulitis linked to Group A β -hemolytic streptococcus predominates, representing most of the cases. Following cellulitis, pneumonia was the second major complication. Additionally, occurrences of zoster and cerebellitis are equally distributed among affected patients.

Figure 1

