



THROMBOCYTOPENIA AS PROGNOSTIC AND DIAGNOSTIC MARKER OF ADULT CHICKEN POX

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ABSTRACT

Abstract: Chickenpox (varicella) is a very common childhood infection caused by the varicella-zoster virus. It is most common in children and increasing trend in adult. Adult chicken pox are more severe than childhood chicken pox.

Thrombocytopenia is frequently noticed in severe chicken pox. Materials and Methods: The study was conducted in a tertiary centre for infection disease Hospital at Kolkata in West Bengal, India. We included all the patients who were admitted with severe chicken pox. Severity of chicken pox are designated by four criteria (1) Rash extending to the palm and sole (2) Visceral varicella (3) Chicken pox pneumonia (4) chicken pox encephalitis.

Result: Out of 608 chicken pox patients we included 100 patients. Out of 100 patient 80 patients had severe thrombocytopenia and developed different type of complications and 38 patients were died. Adult chicken pox is associated with thrombocytopenia. And thrombocytopenia is correlated with severe chicken pox. Thrombocytopenia is a good diagnostic and prognostic marker for severe chicken pox.

Conclusion: Thrombocytopenia is seen in adult chicken pox and severity of adult chicken pox is inversely related to platelet count.

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INTRODUCTION

Chickenpox begins with a fever, followed by macula-papular rash within 1 to 2 days. It is caused by varicella-zoster virus (human herpes virus type 3). The rash starts with red spots that soon turn into fluid-filled blisters. Some of the blister converts to pustule. Sequence of rash is from macula to papules to vesicles to pustules and crusts. Some people have only a few blisters and some people have numerous rash. Lesions are typically crusted 4-7 days after rash onset. It spreads rapidly via airborne droplets from coughing or sneezing, direct contact with the rash, or contact with sheets or clothes recently used by an infected person.

Average incubation period is 14-16 days after exposure to rash (range: 10-21 days)(1) Period of contagiousness is 1-2 days before rash onset until all lesions crusted or disappear, typically 4-7 days (1). Varicella is prevented by two doses of vaccine at least one month apart for all adolescents and adults without evidence of immunity; recommended by CDC (Centers for Disease Control). Varicella is generally self-limited and mostly a mild disorder in childhood but more severe in adults (2). Adults, Immunocompromised persons, Pregnant women are prone to severe complication of varicella infection. Adults who are not immune can be vaccinated against varicella-zoster so that they are protected if they do

come into contact with chickenpox sufferers. Average hospital admission in I.D.& B.G Hospital for chicken pox is >600 per year (3).

Thrombocytopenia is frequently associated with chickenpox (4). Thrombocytopenia due to viral illness is a well known phenomenon (5) and it is good biomarker of viral infection. **Probably platelets itself act as a cofactors in triggering severity of illness.** The incidence of thrombocytopenia was observed higher in severe chicken pox. Thrombocytopenia is a well-known complication of varicella infections (6). Although various mechanisms have been implicated in its pathogenesis, including decreased bone marrow production of platelets, disseminated intravascular coagulation and virally-induced platelet aggregation followed by phagocytosis or lysis. But the main mechanism of thrombocytopenia is immune-mediated platelet destruction (6).

Table 1 Annual report of chicken pox in I.D.& B. G Hospital from 2016 to 2019

Year	Number of admission	Number of death
2016	594	32
2017	804	52
2018	653	31
2019	608	38
Total 4yr	2659	153

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MATERIAL AND METHODS

Objective

To know the frequency of thrombocytopenia associated with chicken pox in adults and its severity .

Design

Observational descriptive study.

Place and Duration of Study

I.D& B. G Hospital, Kolkata, India, Study period was from January 2018 to December 2019.

Patients and Methods

All patients of age 12 years and above with history of fever, followed by appearance of the typical vesicular chicken pox rash, were included after informed consent.

First chicken pox were diagnosed clinically eg. fever associated with typical maculo-papular rash distributed centripetally. Severe chicken pox was established by following clinical parameter.

1. Extensive skin lesion involving the palm and sole.
2. Visceral involvement proved by laryngoscopic examination of oral cavity, pharynx and upper part of larynx.
3. Chicken pox pneumonia by CXR e.g. B/L diffuses infiltration.
4. Chicken pox encephalopathy by examining of GCS<15.

Routine investigation were done on first day of ICU admission to exclude secondary sepsis which may causes thrombocytopenia. Others tropical fever which are associated with thrombocytopenia e.g. Malaria, Dengue, Typhoid, Scrub typhus was rule out by specific test. Routine CBC, Electrolyte, CBG, ABG, LFT, RFT, CXR were done to see any organ involvement. Hemodynamic monitor and GCS monitoring were done as per ICU protocol. Alternate day CBC including platelet counts were performed at least 3 reading in "Automated cell counter, part-4". Patients were treated with (500 mg) iv acyclovir 3 times/day for 7 days, in addition to symptomatic treatment. Twenty patient were treated with high dose of methylprednisolone (500 to 1000mg) iv for 3 to 5 days.

Result and analysis: Total 608 patient were admitted with chicken pox. Out of this 608 patient 100 patient were admitted in ICU as diagnosed severe chicken pox. Out of this 100 patient 80 patient had low platelet and 38 patients were dead.38 patient had varicella encephalopathy and 11 were died. Thirteen patient developed severe bacterial sepsis and 8 died due to severe sepsis. None of them had any bleeding disorder. No sex prediction was observed. Chicken pox pneumonia was 23 and those got IV methylprednisolone were dramatic improvement.

Sl. No	Complication	Number	Survive	Death
1.	Pneumonia	23	16	7
2.	ARDS	12	4	8
3.	Encephalitis	38	27	11
4.	Jaundice	8	7	1
5.	AKI	5	3	2
6.	DIC	1	1	1
7.	Sepsis	13	5	8

DISCUSSION

Chicken pox generally follows a benign course in healthy children. However, the complication rate is observed to be higher in adults, immunocompromised and pregnant women. Furthermore, when the disease occurs in adults and immunocompromised persons, the likelihood of having visceral involvement increases. Thrombocytopenia due to viral illness is a well known phenomenon (5).Thrombocytopenia is considered a common hematological complication of chickenpox infection; however, hemorrhagic manifestations are rare (8,9). In this study, we also had the same observation. Varicella associated thrombocytopenia is well described in the literature but mechanisms involved in platelet reduction are not well understood.

Thrombocytopenia in chicken pox usually develops early in the disease process and the incidence has been reported variably. The frequency of thrombocytopenia in chickenpox patients has been reported as 41.8%(2). But, In this study it is found 80% because we have taken only clinically severe cases. The other investigators also have reported thrombocytopenia as a common hematological finding in patients with chickenpox (8,9).In this study, the temporal pattern of chicken pox associated thrombocytopenia has been established. And thrombocytopenia is predictive markers of severe chicken pox infection. We did not observe bleeding tendency in our patients with thrombocytopenia, no patient required platelet transfusion and platelet count returned to the reference range within one weeks of the treatment. The disease is more severe, complicated and more frequent in adolescents, adults and in non-immune population (10). In tropical climate more cases are reported in adults, 15-20% of affected cases (11).Thrombocytopenia is also a common complication of chickenpox, especially in adults where it is observed at four times the frequency compared with children (12). In this study we observed high mortality rate (38%) of adult severe chicken pox and overall mortality rate of chicken pox is also high (6.25%). Some of causes of death is not clearly explained probably chicken pox cardio-myopathy. There may be some others complication which we do not know. Varicella, once regarded as a benign, self-limiting infectious disease is no longer true.

CONCLUSION

Thrombocytopenia is observed in adult chicken pox and severity of adult chicken pox is inversely related to platelet count. Adult chicken pox are more severe and complicated and causes high mortality rate. Thrombocytopenia is a good diagnostic and prognostic marker for severe chicken pox. High dose of methylprednisolone is suggested in severe chicken pox.

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Consent

Informed consent is taken from each patient.

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