Case Report

Chicken Pox with Multisystem Complications

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Introduction

Varicella zoster virus (VZV) infection is a common infection in children and adolescents. In most of the cases it is a self limiting disease without any complications. In Armed Forces this infection is important because troops stay in close proximity to each other, so there is increased chance of person to person spread. We present a case of chicken pox manifesting with multi-organ life threatening complications successfully managed at a peripheral hospital.

Case Report

A 34 year old male presented to the medical inspection (MI) room with high grade, continuous fever of two days and rash of one day duration. Rash started on the face and spread over to the trunk and limbs. He was diagnosed as case of chicken pox, isolated and started on oral acyclovir. After two days, the patient developed increasing cough and dyspnoea for which he was transferred to our hospital.

On arrival, he was severely dyspnoeic and unable to maintain oxygen saturation in room air. He had tachycardia, fever, a petechial rash all over the body and large haemorrhagic bullae surrounded by an area of erythema, centripetal in distribution (Fig. 1). Respiratory examination revealed bilateral crackles all over lung fields. Examination of other systems was unremarkable. Ryle's tube aspirate consisted of fresh blood and he had frank haematuria.

He was a smoker and there was history of household contact with a case of chicken pox. He had a past history of tubercular meningitis and was on anti tubercular drugs for last 10 months. He had no known immunocompromised disease and had not received steroids or immunosuppressive drugs in the recent past.

Investigations showed thrombocytopenia, deranged liver functions, renal functions and coagulopathy (Table1). Chest radiograph revealed bilateral reticulo-nodular opacities with sparing of apices (Fig. 2). Electrocardiograph (ECG) showed sinus tachycardia. Arterial blood gas showed acute respiratory acidosis with a pH of 7.21, pO₂ of 50 mm of Hg, pCO₂ of 76 mm

of Hg and HCO₃ of 28 mEq/l.

A diagnosis of VZV infection with complications of varicella pneumonia (VP) leading to adult respiratory distress syndrome (ARDS), disseminated intravascular coagulation (DIC) and hepatitis was made. The patient was ventilated with lung protective strategy using a low tidal volume (TV) of 6ml/kg and a high positive end expiratory pressure (PEEP) of 10 cm of H₂O. Controlled ventilation with paralysis and sedation with vecuronium and propofol was administered to the patient. Intravenous acyclovir in doses of 10 mg/kg 8th hourly was instituted. Broad spectrum antibiotics meropenem and teicoplanin were also added for possible bacterial infection. Transfusion support with random donor platelets (RDP), fresh frozen plasma (FFP) and whole blood were given as patient had significant upper gastro intestinal (UGI) bleed and haematuria.

In the first 48 hours of hospitalization he required 12 units of RDP, 12 units of FFP and four units of whole blood transfusion. He also developed oral, nasal and endotracheal bleeding. Radiographic opacities increased by the second day. PEEP and pressure support were increased to 15 cm of H₂O and TV decreased to 4 ml/kg. Steroids were added after 48 hours to counter ARDS. Varicella serology, sent after five days of onset of rash, was positive (23 units/ml). Active bleeding decreased after day three of hospitalization. His

Table 1

Investigation reports from first (D1) to eighth (D8) day of admission

	D1	D2	D3	D4	D5	D8
Hb	14.1	9.2	9.4	8.6	10.4	10.9
TLC	6100	12400	8800	9100	9600	9400
Platelet	20000	42000	94000	124000	140000	170000
S Bilirubin	5.4	2.6	1.2	1.4	1.2	0.9
ALT	130	76	39	44	44	42
AST	112	68	34	31	32	34
P T	13/48	13/40	13/26	13/20	13/18	13/15
Urea	57	50	42	37	32	32
Creatinine	1.3	1.2	1.0	0.8	0.8	0.8
Na/K	124/6.2	135/4.0	145/3.8	142/3.4	140/3.5	138/3.6

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Fig. 1 : Rash on trunk of patient depicting haemorrhagic bullae and petechiae on body.

Fig. 2 : Chest radiograph of patient on admission showing reticulonodular opacities in both lung fields.

haematological parameters gradually improved and by third day he did not require component support, however four more units of whole blood were given over two days to replace the blood loss. Biochemical parameters gradually normalized.

On day five patient developed bradycardia when heart rate reduced to 40-50 beats per minute. ECG showed Mobitz type 1, 2° heart block. Heart block reversed with atropine bolus injection. Subsequently, over the next two days he continued to have intermittent episodes of heart block, which did not require any specific therapy. This transient ECG change was attributed to myocarditis due to varicella infection.

Weaning trials were started by sixth day and he was extubated by eighth day of hospitalization. Antibiotics and acyclovir were continued for a total of ten days. Skin lesions healed and chest radiograph also normalized by tenth day of therapy (Fig. 3,4). ECG reverted back to normal. He was discharged after he was restored to good health and all laboratory data normalized.

Discussion

This patient when presented to our hospital, had fever with rash. He had a large number of petechiae present

Fig. 3 : Scab formation and healing of skin lesions prior to discharge from hospital.

Fig. 4 : Chest radiograph after 10 days of therapy showing radiological clearing.

all over the body and haemorrhagic bullae, which had characteristic distribution of a varicella rash. A diagnosis of VZV infection with complications was considered due to the characteristics of the rash.

VP is the commonest complication of VZV infections in adults; its incidence has been estimated to be 2.3 in 400 cases [1]. Risk factors for VP are smoking, immunocompromised adults, severity of skin rash and chronic obstructive lung disease [2]. Our patient was a smoker and had a severe rash. Treatment of VP consists of early institution of acyclovir therapy and aggressive mechanical ventilation [3]. Acyclovir was started on admission in this patient. The use of steroids has been studied in a trial and has been found to significantly reduce hospital and intensive care unit (ICU) stay and moderately decrease mortality [4]. Respiratory acidosis with hypercapnia in this patient was possibly because of respiratory muscle fatigue as he was dyspnoeic for more than 24 hours when he presented to us. Haemorrhagic manifestations in varicella are a rare

complication and not even a single case was seen in two large case series of varicella related complications [5,6]. In one case report, an immunocompetent male with varicella infection with ARDS and DIC was successfully managed with acyclovir, mechanical ventilation, steroid pulse therapy hemofiltration and component support [7]. Varicella serology is not routinely used in uncomplicated cases, however in complicated cases like these, where lesions of chicken pox do not appear to be classic due to haemorrhagic manifestations, this diagnostic test can be of great help. Immunoglobulin M (IgM) in this patient was positive and confirmed our diagnosis.

To conclude, this was a case of varicella infection with severe, rare complications of DIC, ARDS, myocarditis and hepatitis managed successfully with acyclovir, mechanical ventilation and component support at a peripheral hospital.

Conflicts of Interest

None identified

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Journal Scan

Jason H Ko, Edward C Wang, David M Salve, Benjamin C Paul, Gregory A Dumanian. Abdominal wall reconstruction. Lessons learned from 200 “Components separation” Procedures. Arch Surg 2009;144:1047-55.

The incidence of large incisional hernias is on the rise as more and more damage control laparotomies are being performed for abdominal trauma or intra-abdominal catastrophes. Over the time the musculature of the abdominal wall retracts laterally and increases the size of hernia. In addition there is a high incidence of fistula formation in these cases. No consensus has been reached as to the best method to deal with large midline abdominal wall hernias. Repair of these hernias led to high recurrence rates, 43% for the suture repair and 24% for the mesh repair. Component separation technique is considered an ideal technique for large defects because it loosens the contracted sides of abdominal wall to augment midline repair and in addition this procedure leads to increased lateral abdominal wall complication which may reverse lateral abdominal wall atrophy. The mid line movement of tissue in component separation permits the excision of all scarred and inflamed tissue, decreasing the chance of recurrence.

This article describes the largest reported series of ventral hernia repair by a modified components separation procedure for midline abdominal hernias by a single surgeon at a single institution. This was a retrospective study, studying the baseline characteristics that affected the long term clinical outcomes including hernia recurrences, major and minor complications. The study was conducted over a period of 11 years during which 200 consecutive patients were enrolled into the study. The study demonstrates gradual evolution of the author's technique starting with simple component separation to use of acellular cadaveric dermis to augment the repair to finally setting to augmentation of the repair with soft

polypropylene as the other methods did not give satisfactory results. Of the 200 patients, in 79% cases primary components separation was used, in 9% human a cellular cadaveric dermis augmentation and in the remaining 12%, mesh underlay repair was done. The study included 45.5% recurrent hernias. The cases were followed up to 74 months with a mean follow up period of ten months. The overall hernia recurrence rate was 21.5% in the study. The mean time of recurrence for the overall series was 14.8 months. The major complication occurred in 24% cases included hematoma, infection that required drainage, myocardial infarction and death. The uses of soft polypropylene in 9% logical regression analysis was performed to predict the risk of hernia recurrence and complications, elevated body mass index (BMI) demonstrated a significant effect on hernia recurrence (odds ratio = 1.06, $p = 0.08$) hernia width, diabetes mellitus, smoking and contamination had no effect on hernia recurrence.

The study reinforces the fact that placement of mesh intra-peritoneally will not increase the risk of adhesive bowel disease or enterocutaneous fistulae. Out of 18 patients in whom mesh was placed, none developed bowel obstruction, fistulae or experienced mesh extrusion. Authors conclude that component separation technique is an effective treatment choice for massive midline hernias. Soft mid weight polypropylene mesh reinforcement of the repair provides long term strength, durability and decreased recurrence.

The technique seems applicable in most cases of massive midline hernias, however it needs further evaluation as the number of cases is small and follow up period of the technique is short.

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