

## CASE REPORTS

### DIPHTHERIA MYOCARDITIS: CASE REPORT

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#### ABSTRACT

Diphtheria is a communicable disease which is caused by *Corynebacterium diphtheria*. Global incidence of diphtheria has declined due to worldwide immunization programs, but still cases of diphtheria are reported across the world because of poor vaccine coverage, population growth and low socio economic status. We report here a case of diphtheria in a 13-years-old girl who presented to us with ventricular tachycardia.

**Keywords:** Bull neck, Cardiac involvement, Chinese letter appearance, *Corynebacterium diphtheria*.

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#### INTRODUCTION

Diphtheria is still an important public health problem in developing countries<sup>1</sup>. The incidence of diphtheria in the developed nations has declined because of effective immunization program. Factors like inadequate vaccine coverage, low socio-economic status, delayed reporting of such cases and non availability or delayed administration of diphtheria antitoxin lead to resurgence<sup>2</sup>. The clinical features of diphtheria are fever, sore throat, pseudo membrane, muffled voice and bull neck. Antitoxin is the mainstay of the treatment.

#### CASE REPORT

A 13 years old girl was transferred from a hospital to our hospital in Oct 2016, with 3 days history of continuous high grade fever, severe sore throat rendering her unable to eat and drink. She also developed gradual neck swelling along with nausea, headache and malaise from second day of illness followed by hoarseness of voice. Later she developed palpitation and shortness of breath. ECG showed broad complex tachycardia. Then the clinical provisional diagnosis of diphtheria myocarditis was made and she was transferred to our hospital due to unavailability of diphtheria antitoxin. On arrival to our hospital, a detailed history revealed that she was not

vaccinated as per expanded program on immunization (EPI). On examination sick looking girl, oriented in time place and person was lying on bed without obvious respiratory distress. She had tachycardia, low grade fever and normal blood pressure. Both her height and body mass index for age were at 50th centile. She was irritable, had marked swelling of neck. Throat was examined in controlled settings which showed marked congestion and a grey white membrane covering tonsils and posterior pharyngeal wall. Cervical lymph nodes were markedly enlarged and tender leading to diffuse swelling of neck conventionally called BULL NECK. Rest of systemic examination was unremarkable. Throat swab containing portion of membrane and blood was sent for culture and sensitivity along with other investigations.

Lab tests revealed elevated WBC count with predominant neutrophils. CRP was raised. CK, CK-MB, AST, LDH were markedly raised, RFT were mildly deranged. ECG showed ventricular tachycardia which was reverted to sinus rhythm with IV lignocaine 50mg after which ECG showed heart rate of 110/min, sickle shaped ST depression in anterior precordial leads and broad QRS complexes. Echocardiography was normal. CXR was normal. Chinese letter appearance was seen on gram staining of throat swab. While on Albert stain club shaped rods containing metachromatic granules were found. Throat swab culture and sensitivity report was awaited.

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Treatment with barrier nursing techniques along with strict bed rest was started. Diphtheria anti toxin 40,000 units were transfused over 1 hour after test dose. IM procaine penicillin G 600,000 units 12 hourly started. All contacts were given prophylactic Erythromycin. Patient's general look was improved after antitoxin administration and she started taking orally but unfortunately next day patient suddenly again went into pulseless ventricular tachycardia. Immediately biphasic DC shock with 200 joules was given after which she had complete heart block. Temporary pacemaker was passed but myocardium failed to capture. CPR done with full protocol for 45 minutes but patient didn't survive.

## DISCUSSION

Diphtheria is an acute, communicable disease with overall fatality rate as high as 20-30% in toxic forms up to 70% in diphtheritic myocarditis. The ECG changes of myocarditis may be sickle-shaped sagging of the ST segment (specific for diphtheritic myocarditis), arrhythmias and other conduction abnormalities<sup>3</sup>. If complete heart block develops, the prognosis is usually death<sup>4</sup>. Insertion of a

pacemaker in severely ill patients can be difficult and risky.

Mainstay of treatment in diphtheria is administration of diphtheria anti toxin. Dose ranges from 20,000 to 120,000 units depending upon clinical state, site and size of membrane<sup>5</sup>. Antibiotics like Penicillin or Erythromycin is given for 14 days.

Availability of antitoxin must be ensured at all times. Timely intervention and treatment of patients and contacts can save life and prevent complications<sup>6</sup>.

## CONFLICT OF INTEREST

This study has no conflict of interest to be declare by any author.

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