Case Report

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Neonatal pertusis with classical whoop: an unusual scenario

Payas Joshi*, Sumit Bhatia, Jay Kishore, Chetnanand Jhaz

Department of Neonatology, Max Superspeciality, Patpargani, New Delhi, India

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*Correspondence: Dr. Payas Joshi,

E-mail: payas.joshi@gmail.com

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ABSTRACT

Pertusis affects all the age groups but is most severe in neonates and early infancy and may even cause mortality. Clinical presentation of neonatal pertusis is varied and thus knowing the spectrum of clinical presentation is vital for early diagnosis. Unlike older children, most of the times neonatal pertusis has an atypical presentation and classical presentation is very rare. Here we present such a rare case of neonatal pertusis who presented with classical symptoms of pertusis.

Keywords: Classical, Neonatal, Pertussis, Whoop

INTRODUCTION

Pertussis is a highly contagious respiratory illness caused by Gram-negative coccobacilli, Bordetella pertussis. It infects all age group, but disease is most severe in infants less than 3 months age.

It has been reported that 50% of diseased infants require hospitalization, 50% develops pneumonia and 1% die due to associated complications. It has been observed in various studies that young infants usually present with atypical features i.e. feeding difficulties, apnea, vomiting, seizures, cyanosis and most of the infants do not have characteristic cough.

Contrary to this, we report a case of neonatal pertussis who presented with a history of prolonged cough, which was typically pertussoid associated with paroxysms followed by inspiratory whoop followed by post tussive vomiting.

Also we take this opportunity to emphasize the importance of antenatal immunization in preventing the

severity and incidence of pertusis in infants < 3 months age.

CASE REPORT

A 24-day-old baby girl presented to our hospital with complaint of cough of 2 weeks duration. Baby was on treatment through outpatient department but did not show any symptomatic improvement. Baby was therefore admitted in NICU for further evaluation and management. Cough according to the parents was acute in onset, progressively increased in severity over last few days followed by occasional vomiting. There was no associated history of fever, diarrhea, skin rash, conjunctivitis, and cyanotic episodes while crying or feeding. There was no history of respiratory illness in family. Her birth history showed that she was a full-term baby with weight of 3.58 kg. Mother had regular antenatal check-ups, antenatal period was uneventful and tetanus immunization was given in third trimester. Tdap and influenza vaccine was not administered.

On admission, vital parameters were temperature 37.5°C, heart rate of 160/minute, respiratory rate of 78/minute,

oxygen saturation of 90% and capillary filling time of 2 seconds.

Anthropometric examination revealed that child did not achieve adequate weight gain. On physical examination, child was irritable. Chest showed xiphoid retractions and bilateral crepitations on auscultation. Rest systems were within normal limits. Chest radiography showed nonspecific findings with perihilar infiltrates. Complete blood picture revealed TLC: 30,500 cells/cumm with lymphocytes 73%, neutrophils 20%, monocytes 5% and eosinophils 2%. Peripheral smear was normal. Serial CRP's were non-reactive. Urine routine and culture sensitivity was normal. Blood culture sensitivity was sterile for bacterial culture.

Baby was put on heated humidified high flow nasal cannula support and other supportive measures. During hospital stay, it was observed that baby had severe paroxysmal cough with inspiratory whoop followed by vomiting following which nasopharyngeal swabs were sent for PCR analysis for respiratory pathogens. PCR was positive for B. pertussis and negative for other respiratory pathogens. Echocardiography done to rule out pulmonary hypertension did not reveal any abnormality. Baby was started on oral azithromycin and was given for 5 days. Respiratory support was gradually weaned off over 5 days. Gradually the paroxysms of cough decreased in frequency as well as intensity. Baby started gaining weight adequately and was discharged after 2 weeks of hospitalization when baby tolerated the paroxysms of cough.

DISCUSSION

Prior to 1940's when whole cell vaccine was introduced, pertusis had a high infant mortality rate.3 It led to a drastic decline in pertusis incidence over next 2-3 decades but since 1970, there has been a steady increase in the number of cases with highest affected individuals being infants less than three months age.4 Pertusis is quite severe and fatal in first 3 months, moreover the clinical presentation in neonates is varied and hence recognizing it at an early stage is vital. Studies have showed that infants usually present with atypical features like breathing difficulties, apnea, cyanosis, vomiting, seizures etc. In our case the child presented with a history of prolonged cough. Initially we thought it to be a viral illness. It was later, during the course in hospital when child started having typical pertussoid cough, we had a suspicion of pertusis and the child was accordingly investigated. Nasopharyngeal samples were sent for PCR analysis, which reported positive for B. pertusis. Usually in such cases, there is a history of contact in family member mostly mother with a respiratory illness which was also missing in our case. We started the baby on Azithromycin on day 3 at 10 mg/kg/day for 5 days as recommended by AAP/CDC.5 Azithromycin should be given cautiously in neonates as it has been reported to cause hypertrophic pyloric stenosis. Some investigators

have thus tried another regimen with decreased total dose as 10mg/kg on day 1 followed by 5mg/kg/day on day 2-5.6

Another important aspect in infants less than 3 months is identifying the high-risk infants so that rapid implementation of interventions could be done. High-risk infants include those with WBC >30,000/cumm, HR >170/min, RR >70/min and pulmonary hypertension. Present case had 2 such risk factors i.e. WBC >30,000/cumm and RR >70/min. ECHO was done which ruled out pulmonary hypertension. Pulmonary hypertension is a dreaded complication of pertusis and only effective treatment reported in literature is exchange transfusion. 8

Another important aspect in prevention of neonatal pertusis is routine antenatal immunization. In 2012, ACIP recommended that a dose of Tdap should be administered to the woman during each pregnancy between 27 weeks and 36 weeks of gestation irrespective of the mother's prior vaccination history. In our case, mother was only immunized with TT and not with Tdap which highlights the importance of antenatal immunization. There were some controversies that Tdap causes blunting of immune response to primary vaccination series, but studies have shown that antibody concentration before and after booster dose did not show any difference between infants whose mothers received vaccine with those did not receive vaccine.⁹

CONCLUSION

Pertusis should be considered in afebrile infants <3 months with prolonged cough illness, cough may or may not be paroxysmal. Atypical features like apnea, seizures, vomiting, poor weight gain are not uncommon. Leucocytosis >30,000/cumm and pulmonary hypertension are a risk factor for mortality and should always be ruled out. Antenatal immunization is a key to prevention in early neonatal life.

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