Antenatal TdaP: It's Time India Adapts

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Abstract

Pertussis in infants can be a severe disease leading to higher morbidity and mortality. Infants are usually protected from the disease by virtue of maternal antipertussis antibodies. Those infants where these protective antibodies are lacking due to nontransfer or low maternal antipertussis antibody are at higher risk of the disease. Herein, we report a series of four infants diagnosed with pertussis, bringing to light the fact that infant pertussis is not so uncommon in India and probably due consideration should be given for universalization of antenatal pertussis vaccine.

Keywords: India, Infant pertussis, Maternal TdaP vaccine.

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Introduction

Pertussis in infants is a difficult disease to diagnose, as clinical symptoms and signs can overlap with several common respiratory infections. Young infants are particularly prone to develop severe disease, leading to death in some cases. Usual source of infection is a family member with mild respiratory illness in whom pertussis has not been recognized.[1] Cases of pertussis have been reported in infants who are partially immunized.[2] In 2018, approximately 13,208 cases of pertussis were reported from India,[3] but there is no published data on proportion of infant pertussis in India.

Waning of maternal immunity against pertussis has been identified as the major reason for the recent surge in cases of infantile pertussis. Maternal vaccination with TdaP has been shown to prevent infantile pertussis by transferring protective antibodies to the yet unvaccinated infants. This protective effect gets further augmented once the infants receive primary immunization with pertussis containing vaccine.[4] Both Advisory Committee on Immunization Practices (ACIP) and American College of Obstetrician and Gynecologists (ACOG) conform to this practice.[5,6] They recommend expectant mother to be given 1 dose of TdaP vaccine between 27–36 weeks' gestation, preferably during earlier part of this period regardless of previous history of vaccination. Although, in India too, national bodies like Indian Academy of Pediatrics (IAP) and The Federation of Obstetric and Gynecological Societies of India (FOGSI) recommend Tdap vaccination during adolescent and pregnancy, respectively, the coverage is variable, and TdaP for pregnant women is still not a part of National Immunization Program (NIP).[7–9] This may be probably because of the view that whole cell vaccine (wPV) received by the mother in her childhood will protect her newborn. However, this might not be true for all cases, and herein, we report 4 cases of infant pertussis that we saw within a span of 1 week in January 2020 underlining the importance of antenatal vaccination (Table 1).

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Case Descriptions

Case 1 was a 3-month-old boy who had received two doses of wPV at 6 and 10 weeks of age. He presented with cough for 20 days and tachypnea after having been treated for pneumonia. In view of prolonged cough, pertussis was suspected and qualitative Pertussis polymerase chain reaction (PCR) on a nasopharyngeal swab (NPS) was positive.

Case 2 was a 5-month-old boy who had received wPV at 6 and 14 weeks presented with complaints of paroxysmal cough for 15 days

Table 1: Clinical characteristic of infants with pertussis

Age	*Sex*	*Type of vaccine received (wPV/aPV)*	*Number of doses received*	*Age of vaccination*	*Clinical features*	*Pertussis PCR*
3 months	Male	wPV	2 doses	6, 10 weeks	Prolonged cough (20 days) Tachypnea	Positive
5 months	Male	wPV	2 doses	6, 14 weeks	Paroxysmal cough Tachypnea	Positive
5 months	Male	wPV	1 dose	6 weeks	Cough for 3 days Admitted in same ward as case 1	Positive
3 months	Male	wPV	2 doses	6, 10 weeks	Nasal block 2 episodes of apnea	Positive

and tachypnea for 1 day. In view of paroxysmal cough, his NPS was sent for pertussis PCR, which was positive.

Case 3 was a 5-month-old boy admitted with staphylococcal brain abscesses with probable underlying primary immunodeficiency. He was cared in the ward next to case 1. He developed cough 3 days after case 1 was diagnosed. Hence, pertussis was suspected, and NPS was positive for pertussis PCR. He had received only one dose of wPV.

Case 4 was a 3-month-old boy who had received two doses of wPV at 6 and 10 weeks presented with 2 day history of nasal blockage followed by two episodes of apnea lasting for 10–15 seconds. There was no history of fever. In view of the apneic spells, NPS for pertussis PCR was sent, which was positive.

Conclusion

As can be inferred from these cases, infants had not completed primary immunization with pertussis vaccine when they got infected. Presumably, these infants also lacked the protection from maternal anti-pertussis antibodies. As infection in adult caregivers and visitors is mostly subclinical, prevention of transmission at source is often not practical. Antenatal vaccination with TdaP seems to be our best bet in protecting these vulnerable infants from morbidity and mortality of pertussis. Although we have recently introduced Td (tetanus and diphtheria) vaccine in NIP for adolescent and pregnant mothers to prevent diphtheria outbreaks,[10] we think it is high time TdaP vaccine should be considered for antenatal vaccination to prevent infant pertussis.

References

1. Cherry JD. Pertussis in young infants throughout the world. Clin Infect Dis 2016;63(Suppl 4):S119–S122. DOI: 10.1093/cid/ciw550.
2. Stefanelli P, Buttinelli G, Vacca P, et al. Pertussis study group. severe pertussis infection ininfants less than 6 months of age: clinical manifestations and molecular characterization. Hum Vaccin Immunother 2017;13(5):1073–1077. DOI: 10.1080/21645515.2016.1276139.
3. WHO Vaccine-preventable diseases:monitoring system, 2019 global summary. Available at: https://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B%5D=IND [Accessed on 13th May 2020].
4. Baxter R, Bartlett J, Fireman B, et al. Effectiveness of vaccination during pregnancy to prevent infant pertussis. Pediatrics 2017;139(5):e20164091. DOI: 10.1542/peds.2016-4091.
5. Liang JL, Tiwari T, Moro P, et al. Prevention of pertussis, tetanus, and diphtheria with vaccines in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2018;67(2):1–44. DOI: 10.15585/mmwr.rr6702a1.
6. Update on Immunization and pregnancy: Tetanus, Diphtheria and Pertussis Vaccination. ACOG committee opinion. Number 718. September 2017. Available at: https://www.acog.org/-/media/Committee-Opinions/Committee-on-Obstetric-Practice/co718.pdf accessed on 31 January 2020.
7. Balasubramanian S, Shah A, Pemde HK, et al. Indian academy of pediatrics (IAP) advisory committee on vaccines and immunization practices (ACVIP) recommended immunization schedule (2018-19) and update on immunization for children aged 0 through 18 years. Indian Pediatr 2018;55(12):1066–1074. DOI: 10.1007/s13312-018-1444-8.
8. Vaccination in Women. FOGSI IAP Joint recommendations. Available at: https://www.fogsi.org/wp-content/uploads/fogsi-focus/2018/fogsi-recommendations-of-international-womens-health-summit-2018.pdf [Accessed on 13/5/2020].
9. Universal Immunization Programme. Available at: https://www.nhp.gov.in/universal-immunization-programmeuip_pg [Accessed on 13/5/2020].
10. Tetanus and adult diphtheria operational guidelines. Ministry of Health and Family Welfare. Government of India. Available at: https://nhm.gov.in/New_Updates_2018/NHM_Components/Immunization/Guildelines_for_immunization/Td_vaccine_operational_guidelines.pdf [Accessed on 13/5/2020].