

## Infantile Beri Beri: The Mizoram Experience

In the land where the bamboo flowers, and where the population is just over 10 lakhs, is the small North-Eastern state of Mizoram, from where we would like to share our experience with infantile beriberi and how we handled it.

In the last couple of years, from the months of August-September to around February-March, we used to get very sick infants aged mostly 6 weeks to about 3 to 4 months of age. The babies usually came with complaints of lethargy, drowsiness, groaning, poor feeding, sometimes with high shrill cries and sometimes with rapid breathing – fever was noticeably absent. Most were hospital-born with uneventful birth history. Their mothers had regular antenatal checkups and were receiving iron/ folic acid and calcium tablets till before and after delivery. All the babies were on exclusive breast feed. These babies were mainly from low socio-economic status families.

At first, our line of treatment was on the lines of infection/sepsis. But in spite of giving all the best antibiotics and all supportive measures, we kept losing these infants. When bird flu H1N1 cases were reported from these South East Asia and India, we thought it might be a viral cause and used Oseltamivir suspensions for such sick infants, but to no avail. We contacted National Institute of Virology (NIV), Pune for detailed virological analysis, but there was no response. Our diagnoses for these infants varied from septicemia, viral encephalitis, right heart failure (as echocardiographic findings showed pulmonary artery hypertension, tricuspid regurgitation, and right heart dilatation) [1], acute respiratory distress, shock *etc* as the final end stage presentation. These deaths were an important component of the Infant mortality rate (IMR) in Mizoram.

In December, 2014, having run out of options, we started giving vitamin B-complex infusion (Vitneurin, Beplex) along with the usual antibiotics and supportive care to these infants. Following that practice, there was a dramatic change in the outcome of these infants, and no more babies that came with these symptoms died in our hospital after that period (**Fig. 1**). We concluded that we were dealing with infantile beriberi, and giving a bolus of

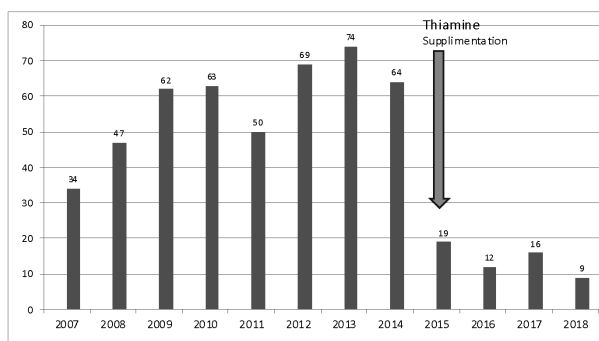
thiamine infusion and seeing the clinical response is the best diagnostic method [2].

We presented our findings to the Department of Health and Family Welfare of Mizoram (NHM) in Aizawl in March, 2015. Convinced by our observations, a government order was issued for all post-partum mothers to be given vitamin B complex tablets from their time of delivery till their babies were six months of age. These vitamin B complex tablets were to be dispensed from the institution of delivery (District hospitals, PHCs, Sub Centers) to last till their child's first vaccination. Further, vitamin B complex tablets were to be dispensed from sub-centers on vaccination days.

The actions taken by the government health authorities led to a marked decline in new cases of infantile beriberi in the State of Mizoram. From 2015 onwards, these cases just dried-up and the infant deaths dropped, possibly also contributing to the lowering of infant mortality rate of Mizoram.

Although, we did not find any literature on universal B-complex supplementation for postpartum mothers, it was better than waiting for infants to develop beriberi.

We now know that thiamine deficiency is rampant in Mizoram. These infants who died or came with the illness were mostly low socio-economic families, the mothers were regular pan chewers, and infants were on exclusive breast feeds. The risk of beriberi is known to increase in individuals who consume a diet high in thiaminase-rich foods (*eg*, raw freshwater fish or shellfish, ferns), a diet high in anti-thiamine factors (*eg*, tea, coffee, betel nuts), or both [3]. Since betel nuts cause depletion in vitamin B1



**Fig. 1** Infant mortality at Synod Hospital, Durtlang before and after routine thiamine supplementation in the post-partum period.

stores and with a poor nutritional intake, babies born to these mothers have a very poor chance of survival. Breastfed infants whose mothers have thiamine deficiency develop an infantile form of beriberi [4]. Providing iron and calcium tablets to mothers does not help, if the mother is thiamine-deficient [5].

Since supplementation for pregnant women in India is only oral calcium, iron and folic acid, it would be prudent to additionally provide vitamin B1, B6 and B12. This would go a long way in saving the lives of infant born to thiamine-deficient mothers without additional infrastructure and manpower inputs.

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## All is not well

It was the day of festival of lights. But an unfortunate toddler was stuck in darkness in the depths of an unclosed abandoned borewell near his home at Nadukattupatti in Trichy district of Tamil Nadu. Public, media, politicians, fire personnel and all the paraphernalia were around. But the child's life could not be saved. Even before this tragedy ended, another toddler from Tuticorin drowned in a water filled barrel at home. Paradoxically, her parents were watching the live coverage of the rescue operations of the borewell boy. Chennai was not far behind. A cracker burst incidence lead to loss of vision in a child who was a bystander. These examples are just tip of the iceberg and there could be several other unaccounted stray incidents in the community. Is the concept of prevention restricted only to textbooks of preventive medicine?

The major thrust area in child health is infections and non-communicable diseases; however, accidents in and around the home environment silently add to the under-five mortality. Water scarcity is an important basic problem giving rise to more borewells and water barrels. The above accidents were preventable. The abandoned borewell and water barrel should have been covered. The parents should have watched the toddler and not the television. Eyes should have been covered with goggles when bursting crackers.

Anticipatory guidance should be given by the

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healthcare provider to assist parents or guardians to prevent accidents during expected growth and development of their children. It is specific to the age of the child, and includes information about the benefits of healthy lifestyles and practices towards injury and disease prevention. Common examples include reminding about foreign body aspiration when pincer grasp develops; keeping kerosene, button batteries and pills away from the reach of toddlers; using appropriate footwear and bicycle helmets and decreasing screen time and avoiding junk food for school children and adolescents. Engineering at home, school and roads should focus on child safety. A multi-pronged approach using legislation, safety technology, improving the built-environment, anticipatory guidance by healthcare providers, and education of caregivers is necessary to decrease and prevent injuries in the twenty-first century [1,2]. The government and society should wake up and ensure that all is well with all children.

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