

Toxic Shock Syndrome: An unforeseen Complication Following Measles Vaccination

M.A. Phadke
B.N. Joshi
U.V. Warerkar
M.P. Diwan
G.A. Panse
J. Sokhey
S.M. Bhate

With increasing awareness in public and a strong backing from the Government health authorities, it is natural that a large child population of India will be under immunization cover soon. Even today, a number of programmes are organized to boost the immunization coverage. Universal immunization programme had been launched in 1985 with an aim of covering 85% of BCG and measles and 100% coverage of pregnant women with 2 doses or a booster of TT(1). It is the duty of all those involved in these programmes to ensure administration of a potent vaccine with utmost safety. One pitfall somewhere is likely

From the Department of Pediatrics, B.J. College and Sassoon General Hospitals, Pune; Health Services, Government of Maharashtra and Ministry of Health, Government of India, New Delhi.

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to give a major setback to the programme. We herewith report the occurrence of a serious complication following measles vaccine administration, an aftermath possibly of contamination.

Material and Methods

In the month of July 1988, the authors visited Mandrup PHC and Bhandarkavathe subcentre in Solapur district to investigate a problem that occurred following measles vaccination.

On 16th July an ANM from Bhandarkavathe subcentre immunized 11 children with measles (and 10 with oral polio). Their ages ranged from 0 to 18 months. Within 3 hours of immunization, 4 children started getting diarrhea and vomiting. They were treated with ORT. Within 15 hours, one child died at the subcentre, one on way to Primary Health Centre and one in Solapur Civil Hospital 24 hours later.

One surviving child and remaining 7 apparently healthy children were hospitalized at the Solapur Civil Hospital and were available for detailed examination. From the history, interrogation of parents and examination, the following points emerged:

(i) All the children started profuse vomiting and diarrhea within 3 hours of vaccination with measles. Stools were copious, rice water like with flat flakes and shreds. Diarrhea was frequent.

(ii) The complaints persisted in two children; they had developed high fever and were toxic.

(iii) Besides diarrhea, vomiting, fever and toxicity, the surviving 4th child had the following signs: dehydration, tachycardia,

hypertension, altered sensorium, transient areflexia, dark coloured stools and coffee ground gastric aspirate, conjunctival injection, red palms and soles, mucocutaneous ulcerations and superficial necrotic patch at the site of injection.

Investigations revealed prolonged prothrombin time, increased SGOT, SGPT, and culture from necrotic patch scraping grew pathogenic staphylococci (*S. aureus*). Other usual parameters like hemogram, urine, blood urea, etc. were normal. The vaccine vial content culture was not possible.

Vaccination methodology

After probing in the details regarding administration of measles vaccine, there was some evidence to believe that one 'used vial' of measles vaccine was kept in cold water in an earthen pot for about seven days and that was the one that probably was contaminated. This was injected in 4 children who had severe manifestations like 'Toxic Shock Syndrome'; 3 succumbed to the illness and 1 survived.

Discussion

Toxic shock syndrome (TSS) is a well recognized entity which has come into existence since 1978(2). It was initially seen in women who were using tampons in the presence of vaginal colonization and/or infection with toxin producing strains of *Staphylococcus aureus*(3). However, TSS continues to occur in men, children and non-menstruating women. The source of infection has been post partum vaginal infection, cesarean section, surgical wound infections, local infections, abscesses, empyema etc.(4) with a very acute fulminant course. The following are the hall

marks of toxic shock syndrome(5): high fever, diarrhea, vomiting, tachycardia, hypertension, mucocutaneous ulceration, erythematous rash, conjunctival injection, red palms and soles and bleeding diathesis.

This is possibly the first reported and documented case of toxic shock syndrome following measles vaccination. Since the opened vial was stored in water for 7 days and since the vaccine does not have a preservative being a live one, it is likely that it was heavily contaminated with staphylococci that produced an exotoxin (TSS 1) and an enterotoxin. Pathogenic staphylococci were isolated from the subcutaneous scraping of the small necrotic patch at the site of injection.

Over 1000 cases have been reported of TSS in 48 states of the USA. The first case was reported in 1978 in children. Recurrence rate is 30% and mortality rate is around 8%. The purpose of reporting this case is twofold. The first one is to create awareness among all those associated with immunization camps, about the incorrectness of storing the vaccine in an earthen pot. Even at a subcentre such practices should be banned. Places where refrigeration and cold chain maintenance is not possible, vaccine should not be stored. Second point is that a vial which is opened once should be used within 3 hours in one session and not carried forward as was in this case, probably for 7 days. The disastrous effects of this are too alarming to warn every one associated with immunization programmes. An enthusiastic approach which is equally careful and vigilant is what is the need of the hour.

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Age for Assessment of Trivalent Oral Polio Vaccination Coverage: Is there a Need for Revision in India

N. Deivanayagam
N. Mala
K. Nedunchelian
T.P. Ashok
S. Shaffi Ahmed

During the past decade great emphasis has been placed on immunization. It has taken the shape of the Universal Immunization Programme (UIP) in 1985 and Im-

munization Mission in 1989. The important objective is to achieve 85% coverage of eligible infants and pregnant women through intensified efforts(1). One such effort is Integrated Child Development Service (ICDS) Scheme. The managers of UIP have been evaluating the immunization coverage under one year of age. The objective of this study is to evaluate the coverage *as per the recommended age of immunization schedule* of Government of India namely 6, 10 and 14 weeks so as to know whether there is a need to bring down the age limit for coverage evaluation of trivalent oral polio vaccine (TOPV) to under 6 months for better provider and consumer compliance.

Subjects and Methods

Cross-sectional surveys were done in June, 1988 and in October 1989 in an ICDS project area of Madras city. The birth and immunization records of all the children in the project area are maintained at the ICDS centers. The study population, all children aged 0-11 months were enumerated. Data regarding immunization status of TOPV, DPT, BCG and measles vaccine was documented in a proforma from the records of individuals and/or registers in the centers by the Anganwadi workers, after they were trained to do so. Random

From the Advanced Centre for Clinical Epidemiological Research and Training (ACCERT), Institute of Child Health and Clinical Epidemiology Unit (CEU), Madras Medical College, Madras.

Reprint requests; Dr. N. Deivanayagam, ACCERT/CEU, Institute of Child Health, Hall's Road, Egmore, Madras 600 008.

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