Alert: Hemolytic uremic syndrome

In May 1993 the General Directorate for Health Affairs in Tabuk reported four children who developed dysentery followed by hemolytic uremic syndrome (HUS). One child had developed dysentery while in a village in southern Gizan, two while returning to Tabuk by car from Gizan, and one after returning to Tabuk. *Shigella dysentariae* type 1 was isolated from the four children and eight other family members with diarrhea or dysentery. The organism was resistant to cotrimoxizole, chloramphenicol, tetracycline, ampicillin and amoxicillin and was sensitive to nalidixic acid. The family reported that many other persons in their village in Gizan had diarrhea with blood. Health authorities in Gizan reported that they were aware of increasing reports of dysentery with HUS, but that no organism had been isolated.

The Ministry of Health requested all health regions to report new cases of HUS (Circular 1549/19, dated 7 Dhul-Qa'da 1413). Laboratories throughout the Kingdom were asked to report isolations of *S. dysentariae* type 1. Dammam responded with a report of two isolations of *S. dysentariae* type 1 with an identical antibiotic resistance pattern as the Tabuk isolates from a child and his aunt. The child had developed bloody diarrhea while traveling from Najran to Dammam. The family reported that many persons in their home community in Najran had bloody diarrhea. Health authorities in Najran reported that they were aware of 10 cases of dysentery with HUS. Health authorities in Gizan and Najran were advised to use nalidixic acid or oral rehydration alone for the presumptive treatment of dysentery. A team from the Field Epidemiology Training Program traveled to Gizan and Najran to investigate both outbreaks.

Gizan: Dysentery cases were found in multiple villages in south and central Gizan. Beginning in March 1993, *S. dysentariae* type 1 was isolated from four dysentery cases. Twenty-three cases of dysentery with HUS were identified. The median age was 1 year and the children came from 15 different villages. Seventy-eight percent (18) developed HUS from 2 to 14 days after hospital admission for uncomplicated dysentery. This compares with a hospital admission rate of 27% (40 of 147) control children of the same age with dysentery from the same communities (odds ratio [OR] = 9.6, 95% confidence interval [CI] = 3.1-35).

Rates of development of HUS after hospital admission for dysentery varied among different hospitals in Gizan from 0% to 31%. Hospitals with the highest rates of HUS characteristically used ampicillin for presumptive treatment of dysentery. Treatment of the dysentery with ampicillin preceded onset of HUS in 14 of the 18, compared with 41 of 76 hospitalized dysentery cases that did not develop HUS (OR = 3.0, 95% CI = 0.8-12).

All five children who developed HUS either before or on the day of hospital admission had received oral ampicillin for 5 to 7 days before developing HUS. This compares with two of nine community control children under 18 months old who had dysentery but were not hospitalized (OR = infinite, P value = 0.02, Fisher's exact test).

Najran: Unlike Gizan, the outbreak of dysentery was localized in a community of 7,000 Yemeni refugees (Barshash) and visitors from Gizan. From March until June 1993, 859 people had sought treatment for dysentery at the Barshash primary health care center. All 10 HUS cases developed from 2 to 10 (median 5) days after hospital admission among 44 children (median age 4 years) with uncomplicated dysentery.

Development of HUS in the hospital was associated with treatment with ampicillin or amoxicillin (OR = 5.1, 95% CI = 1.7-16). All analyses were adjusted for body weight and age.

The hospitals in both Najran and Gizan changed their presumptive therapy for dysentery in children to nalidixic acid. No new cases of HUS developed during the summer months.

Editor's note: *Shigella dysentariae* type 1 produces a verotoxin that is known to cause HUS. However, the rates of development of HUS as reported in the literature have been low (under 1% of of dysentery cases). Rates of development of HUS after hospitalization for uncomplicated diarrhea as seen in this outbreak are very high by comparison. The strong association of HUS with presumptive ampicillin treatment of dysentery suggests that treatment with antibiotics to which *S. dysentariae* type 1 was resistant led to the development of HUS. A previous study also showed this same association of HUS with inappropriate antibiotic treatment of *S. dysentariae* type 1 infections.[1] Given these data and the previous experience, physicians should be cautious when treating dysentery with antibiotics unless the causative organism and the resistance pattern have been identified.

Surveillance of HUS and shigellosis is the most important way to detect any spread of this multiply resistant *Shigella* organism in southern Saudi Arabia and to advise clinicians on the antibiotic resistance pattern. Reporting of new HUS cases is required under the directive given in Circular 1549/19. Shigellosis is also notifiable and laboratories are urged to be prepared to type all *Shigella* isolates. These outbreaks illustrate the importance of laboratory support for surveillance of diarrheal diseases. In these outbreaks a dangerous organism was isolated and appropriate control measures for HUS instituted.

Control of shigellosis depends upon improvements in personal hygiene. *Shigella* are easily transmitted from child to child on the hands and from the hands to the mouth. Accordingly, promotion of good handwashing habits is a key control measure. Physicians need to instruct mothers of children with dysentery to improve handwashing habits of the entire family.

Reported by Dr. Nasr Tantawi (Preventive Medicine Department, General Directorate for Health Affairs, Tabuk Region), Salah A. Bubshait (Directorate for Primary Health Care, Eastern Region), Dr. Abdulaziz A.A. bin Saeed, Dr. Sami M. Al-Qarawi, Khalid Al-Shibani and Ahmed A. Al-Zubaidy (Field Epidemiology Training Program).

Reference

1. Butler T, Islam MR, Azad MAK, Jones PK. Risk factors for development of hemolytic uremic syndrome during shigellosis. J Ped 1987;110:814-7.