Medical News

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Multidose Vial Transmits HCV

Hepatitis C virus (HCV) is the most common chronic bloodborne infection in the United States, but nosocomial transmission has been reported rarely. Dr. S. Gerard Krause, of the CDC, recently reported the results of an investigation that identified four patients likely infected with HCV from a multidose vial of saline that was contaminated with the source-patient's blood. This may have occurred with reinsertion of a contaminated needle into the saline vial.

The investigation involved a cohort study of patients hospitalized on a ward in Miami between November 11 and November 19, 1998. Patients were interviewed, records were abstracted, and blood was tested for anti-HCV, and the HCV RNA-positive samples were genotyped.

Five patients were found to be infected with HCV genotype 1b. One patient, probably the source, had chronic HCV before being hospitalized. The other four patients, however, showed no evidence of prior HCV infection.

Of the 8 patients on the ward who received saline flushes of intravenous catheters within 2 to 6 hours after the source-patient, 4 (50%) became infected with HCV; of the 12 patients who did not receive saline flushes of their intravenous catheters, none were infected.

The researchers concluded that HCV was probably transmitted from a chronically infected patient to four other patients after a multidose saline vial was contaminated with the source-patient's blood. "The saline solution most likely became contaminated by accidental reinsertion of a contaminated needle or improper decontamination of the rubber membrane of the vial," Gerard-Krause said. "Subsequent flushes of the same vial could then have resulted in transmission of the virus."

"We recommend that hospitals emphasize proper adherence to infection control procedures. The use of single-dose vials or pre-filled syringes for saline flushes might further reduce the risk of nosocomial transmission of bloodborne pathogens," Krause said. "The hospital in question has now stopped the use of multidose vials in favor of single-use vials," he noted.

FROM: Krause SG, Whisenhunt S, Trepka M, Katz D, Ninan O, Wiersma S, et al. Patient-to-patient transmission of hepatitis C virus associated with the use of multidose vials of saline. Presented at the 49th Annual EIS conference; April 10-14, 2000; Atlanta, GA.

Emergence of Highly Antibiotic-Resistant *P aeruginosa*

Weiss and colleagues from the Florida Consortium for Infection Control, South Miami, Florida, conducted a study to examine antibiotic resistance in *Pseudomonas aeruginosa* in hospitalized patients in relation to prior empirical antibiotic therapy. The study consisted of two retrospective case analyses comparing patients who manifested *P aeruginosa* with differing patterns of antibiotic resistance in patients acquiring *P aeruginosa* infection in a community hospital. Patients were compared on duration of hospitalization and days and doses of antibiotics prior to recovery of *P aeruginosa.* Patients were grouped, based on susceptibility patterns of their *P aeruginosa* isolates, as follows: (1) fully susceptible (susceptible to all classes of antipseudomonal antibiotics [SPA]); (2) multidrug-resistant (resistant to two classes of antipseudomonal antibiotics [MDRPA]); or (3) highly drug-resistant (resistant to ⩾6 classes of antipseudomonal antibiotics [HRPA]). To control for duration of hospitalization, antibiotic treatments of HRPA and SPA patients were compared during the first 21 days of care.

Prior to recovery of HRPA, 6 HRPA patients received greater amounts of antibiotics, both antipseudomonal and non-antipseudomonal, than did 6 SPA patients prior to recovery of SPA. For 14 patients with hospital-acquired SPA who later manifested MDRPA, duration and dosage of antipseudomonal antibiotics, but not all antibiotics, were significantly higher for the SPA-to-MDRPA interval than for the preceding admission-to-SPA interval. The median duration of antipseudomonal antibiotic treatment prior to the recov-

ery of *P aeruginosa* was 0 days for SPA, 11 days for MDRPA, and 24 days for HRPA.

The authors concluded that the duration of empirical antipseudomonal antibiotic treatment influences selection of resistant strains of *P aeruginosa;* the longer the duration, the broader the pattern of resistance.

FROM: Philippe E, Weiss M, Shultz JM, Yeomans F, Ehrenkranz NJ. Emergence of highly antibiotic-resistant *Pseudomonas aeruginosa* in relation to duration of empirical antipseudomonal antibiotic treatment. *Clinical Performance and Quality Health Care* 1999;7:83-87.

Evaluation of an Antiseptic Triple-Lumen Catheter in an ICU

Hanley and coinvestigators, from the Department of Epidemiology, Albany Medical Center Hospital, Albany, New York, conducted a study to evaluate a decrease in catheter-related (CR) bloodstream infection (BSI) rate in patients with antiseptic triple-lumen catheters in an ICU.

They conducted a retrospective review of surveillance records, patient medical records, laboratory and microbiological reports, and antibiotic administration records. The study included patients admitted to the ICU with triple-lumen catheters. A subset of one entry per patient was extracted from 2 years of primary BSI surveillance data. Data collection included risk factors, laboratory and microbiological data, insertion sites, and dates of all intravascular catheters present during triple-lumen catheterization.

The CR BSI rate was 5.4 and 11.3 per 1,000 catheter-days in antiseptic and nonantiseptic triple-lumen catheter groups, respectively (P=.06).

By multivariate analysis using a Cox Proportional Hazards Model, the antiseptic triple-lumen catheters (chlorhexidine gluconate and silver sulfadiazine) were associated with a significant reduction in CR BSI (P=.03).

The authors concluded that the use of antiseptic triple-lumen catheters may substantially reduce CR BSIs in an intensive care population and may be subsequently associated with a decrease in length of stay.

FROM: Hanley EM, Veeder A, Smith T, Drusano G, Currie E, Venezia RA. Evaluation of an antiseptic triple-lumen catheter in an intensive care unit. *Crit Care Med* 2000;28:366-370.

TB Practices in Maryland Hospitals

In 1992 and 1993, the Maryland Hospital Association and the Maryland Department of Health and Mental Hygiene conducted two surveys of TB prevention practices in Maryland hospitals that showed poor compliance with the 1990 CDC guidelines for preventing transmission of TB in healthcare facilities. In 1997, Fuss and colleagues conducted a study to assess compliance with the CDC's guidelines in Maryland acute-care hospitals.

A written questionnaire with three components (Infection Control, Employee Health, and Microbiology Laboratory) was mailed to 56 Maryland acute-care hospitals. Seventy-three percent of the surveys were returned. One hundred percent of responding hospitals with TB isolation rooms reported negative-pressure ventilation, six air exchanges per hour, and air exhausted to the outside or through high-efficiency particulate air filters. One hundred percent of the responding hospitals reported providing NIOSH-approved respiratory protection for healthcare workers, compared with 24% in 1992 (P<.01). One hundred percent of the responding hospitals reported performing at least annual tuberculin skin testing, compared with 50% in 1992 (P<.01).

The survey results demonstrate excellent compliance with the 1994 CDC recommendations for TB control in Maryland acute-care hospitals, even in those facilities determined to be at minimal to low risk for TB exposure. The proposed OSHA regulations are unlikely to reduce the risk of TB exposure to healthcare workers in Maryland acute-care hospitals further.

FROM: Fuss EP, Israel E, Baruch N, Roghmann MC. Improved tuberculosis infection control practices in Maryland acute-care hospitals. *Am J Infect Control* 2000;28:133-137.

Prolonged Hospital Stay and Surgical-Site Infections

The accepted standard in estimating the stay prolongation attributable to surgical-site infections (SSIs) is the matched-cohort study (MCS) method, which is associated with selection bias. The Appropriateness Evaluation Protocol (AEP) has been used to estimate stay prolongation attributable to nosocomial infections but has not been validated specifically for SSIs.

Merle and coinvestigators, from the Rouen University Hospital–Charles Nicolle, conducted a study to compare estimates of stay prolongation attributable to SSIs after digestive surgery, obtained by AEP and by MCS. Sixty-five SSIs after digestive tract surgery were analyzed by AEP and MCS. AEP stay prolongation was the number of days judged specifically appropriate for the care of SSIs. MCS stay prolongation was the difference of stay duration in SSI cases and two controls matched by age, gender, and diagnosis-related groups. Sensitivity and specificity of AEP, and agreement between both methods, were calculated.

The mean AEP stay prolongation was 3.5 days versus 7.2 days for MCS. The sensitivity of AEP was 58%, and the specificity was 75%. The agreement between the two methods was poor.

The authors concluded that SSIs after digestive tract surgery increased the hospital stay. Accurate estimations of a prolongation of stay will vary according to the method selected.

FROM: Merle V, Germain JM, Chamouni P, Daubert H, Froment L, Michot F, et al. Assessment of prolonged hospital stay attributable to surgical site infections using