Medical News

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Additional news item in this issue: *Effects of Silver Device on Peritoneal Dialysis Catheters in Preventing Infection,* page 25.

Risk of *Vibrio vulnificus* Infection From Raw Shellfish Consumption

Raw shellfish-associated *Vibrio vulnificus* septicemia, with a case-fatality rate of nearly 50%, occurs most commonly in immunocompromised patients or those with liver disease. Gholami and coinvestigators from George Washington University, Washington, DC, studied dialysis patients who consumed raw shellfish to determine risk factors associated with infection. Sixty patients with renal disease treated with hemodialysis at George Washington University and awaiting renal transplantation completed an initial survey that assessed their raw shellfish eating habits and their knowledge of *V vulnificus*. Patients were then given educational materials describing the risks of eating raw shellfish and 1 month later completed a second survey that assessed their knowledge retention and intent to eat or not eat raw shellfish in the future.

Sixty of 68 (88%) eligible patients completed the survey. Forty-eight percent of patients reported having eaten raw shellfish after being diagnosed with kidney disease, with the highest rates reported among subjects ≤49 years old and subjects with more than a high school education. Prior to receiving the educational materials, no patient had heard of the pathogen *V vulnificus*. Three quarters of patients reported never having been advised by a physician to avoid eating raw shellfish. One month after reading the educational materials, 75% of patients said they would refrain from eating raw shellfish in the future. The authors concluded that, in view of their immunocompromised status, patients with end-stage renal disease should be counseled to abstain from eating raw shellfish.

FROM: Gholami P, Lew SQ, Klontz KC. Raw shellfish consumption among renal disease patients. A risk factor for severe *Vibrio vulnificus* infection. *Am J Prev Med* 1998;15:243-245.

Risk Factors for Central-Line Infections

Charalambous and coinvestigators from the Manchester University School of Medicine, England, studied the risk factors and clinical impact of central-line infections among patients in the surgical intensive-care unit of a large tertiary-care university hospital. Catheter cultures were obtained from a total of 93 patients during 1996 and 1997, when the patients were clinically infected and the central line was a possible source.

Of 232 consecutive catheters sent for microbiological analysis, 114 (49%) had no growth, 40 (17%) were colonized (<15 colonies), and 78 (34%) were considered infected (≥15 colonies). Univariate analysis showed that site (internal jugular vs subclavian, $P<.001$), catheter use (monitoring>dialysis>fluid>nutrition, $P=.006$), placement in the operating room versus the intensive-care unit ($P=.02$), and placement of a new catheter (>guide wire, >new site, $P=.003$) all were significant factors. Surprisingly, neither the number of lumens nor the duration of the catheter in situ were predictors when a catheter was suspected and not proved infected compared with a suspected and proved catheter infection. In the multiple regression model, the placement of the catheter in the internal jugular position was the single most important predictor of a catheter infection ($P<.001$; odds ratio, 1.83; 95% confidence interval, 1.41-2.37). The presence or absence of a specific clinical sign of infection was not predictive of a proven catheter infection. Eighty-six percent of patients had gram-positive bacteria identified on the culture; 32% of infections were polymicrobial. Of the catheters sent for microbiological analysis, 209 (90%) had concurrent peripheral blood cultures for analysis. Nineteen (32%) with no growth from the catheter and 14 colonized catheters (23%) had concurrent bacteremia; all had another identifiable cause of infection. Twenty-seven infected catheters (45%) had a concurrent bacteremia, and 9 of 27 had a second site positive for the same organism. Death related to the infection occurred in 15 patients, 2 in the first 72 hours and 13 in the following 14 days.

The authors concluded that central-line infections remain an important cause of morbidity and mortality. This study provides additional support for the recommendation in the CDC's 1996 "Guideline for Prevention of Intravascular-Device–Related Infections" that the subclavian, rather than jugular or femoral, sites be used for central venous catheter placement, unless medically contraindicated.

FROM: Charalambous C, Swoboda SM, Dick J, Perl T, Lipsett PA. Risk factors and clinical impact of central line infections in the surgical intensive care unit. *Arch Surg* 1998;133:1241-1246.

Characteristics Associated With Dialyzer Reuse Practices and Mortality

The reuse of hemodialyzers on the same patient has become a standard practice in the United States. More than 80% of licensed dialysis centers reuse the hemodialyzer (which is labeled for one-time use) an average of 15 times.

The diverse patient and dialysis-unit characteristics in the United States pose challenges for assessing the safety and efficacy of reuse practices. Collins and coinvestigators from the Hennepin County Medical Center, University of Minnesota, conducted a study to determine if the chemical germicides used to sterilize the dialyzers during reprocessing had an effect on patient mortality.

A 10% random sample of period-prevalent hemodialysis patients from units practicing conventional dialysis (<25% of patients with high-efficiency/high-flux dialysis) were analyzed. The data included 13,926 patient observations in 1989-1990 and 20,422 in 1991-1993. CDC-Health Care Financing Administration facility survey Medicare data were analyzed with a Cox regression model, evaluating the risk of reuse compared with no reuse and adjusting for comorbidity, unit characteristics, and profit status. In 1989-1990, freestanding and hospital-based units that did not reuse dialyzers were not significantly different from each other in mortality rates. In 1991-1993, however, no-reuse, freestanding, for-profit units had higher risks (relative risk [RR]=1.23, P=.003) compared with no-reuse, hospital-based, nonprofit units. No-reuse, hospital-based, for-profit units, in contrast, were associated with a lower mortality risk (RR=0.70, P=.0001).

An isolated higher risk associated with peracetic acid manual reuse in freestanding units (1989-1990) was identified in for-profit units only. In the 1991-1993 period, an increased mortality risk was noted in hospital-based nonprofit units practicing formaldehyde automatic reuse and in freestanding for-profit units using glutaraldehyde, which accounted for <5% of all units. All other interactions of reuse germicide and technique were not different from no reuse.

The varying mortality rates identified in both no-reuse and reuse units using conventional dialysis suggest that other factors, such as dialysis therapy and anemia correction (both known predictors of patient survival), have a greater influence on US mortality than reuse germicides and techniques.

FROM: Collins AJ, Ma JZ, Constantini EG, Everson SE. Dialysis unit and patient characteristics associated with reuse practices and mortality: 1989-1993. *J Am Soc Nephrol* 1998;9:2108-2117.

Vancomycin-Resistant Enterococci in Australia

Enterococci with acquired resistance to vancomycin and other glycopeptides have emerged and spread rapidly through Europe and the United States since 1988. Bell and colleagues from the Department of Microbiology and Infectious Diseases, Women's and Children's Hospital, Adelaide, recently reported on the vancomycin-resistant enterococci (VRE) problem in Australia.

The first isolate of VRE in Australia occurred in 1994. Only one case was noted in 1995. Since March 1996, there has been a steady increase in the number of reports of VRE throughout the country. To August 1998, there have been 69 documented strains or clusters of strains detected in patients with documented infection, and approximately three times as many strains have been detected through screening procedures of contacts or in risk groups. Nineteen percent of strains whose source was known were blood isolates, 34% came from urine, and 47% came from other specimens. The strains have been found in 26 institutions in 10 widely separated cities or regions of the country (in 6 of 8 states or territories), without any obvious temporal associations in their appearance.

All strains appear to have arisen locally except for one strain imported from the United Kingdom; there was no direct evidence of interhospital transfer of strains. Of the 69 strains, 42 were *van*B *Enterococcus faecium*, 12 were *van*A *E faecium*, 9 were *van*B *Enterococcus faecalis*, and 3 were *van*A *E faecalis*. Three were negative for *van*A, *van*B, *van*C1, *van*C2/C3, and *van*D. Pulsed-field gel electrophoresis (PFGE) profiles on 38 strains have revealed at least 8 types of *van*B *E faecium*, 6 of *van*A *E faecium*, 4 of *van*B *E faecalis*, and 2 of *van*A *E faecalis*. Isolates containing *van*A always had different profiles from those containing *van*B. Clinical clustering was confirmed by PFGE and supported by extended antibiogram. Fourteen of 15 *E faecalis* were ampicillin susceptible, compared to only 2 of 54 *E faecium*. One *E faecalis* strain was β-lactamase–positive. The epidemiology of VRE in Australia appears to be different from that of Europe or the United States, since *van*B *E faecium* predominates and strains have appeared in diverse locations independently and are highly polyclonal.

FROM: Bell J, Turnidge J, Coombs G, O'Brien F. Emergence and epidemiology of vancomycin-resistant enterococci in Australia. *Commun Dis Intell* 1998;22:249-252.

Vancomycin Use in Burn Patients and Risk of Resistance

Investigators from the US Army Institute of Surgical Research, Fort Sam Houston, conducted a retrospective study to document the risk of the development of vancomycin-resistant bacteria in a population of seriously burned patients during a 10-year period of common vancomycin hydrochloride use. Microbiology, infection, and antibiotic-use records collected during the hospitalization of 2,266 consecutively admitted seriously burned patients were reviewed. Vancomycin was the primary therapeutic agent used for gram-positive infections and also was used as a perioperative prophylactic antibiotic during burn-wound excision. This policy was established because of a high incidence of methicillin-resistant *Staphylococcus aureus* colonization and an anecdotal association of increased β-lactam resistance in endemic gram-negative pathogens associated with the use of penicillinase-resistant penicillins and cephalosporins.

Examinations of 15,125 gram-positive isolates, including 957 enterococci, for in vitro sensitivity to vancomycin yielded 3 vancomycin-resistant enterococci (VRE) isolates in 3 patients. Vancomycin was used prior to VRE isolation in 1 of these patients. Resistance was found in three other organisms (two *Corynebacterium* species, 1 *Lactobacillus* species). Vancomycin was used prior to these isolations in 2 of 3 patients. None of the vancomycin-resistant organ-