

WESTERN REGIONAL MEETING ABSTRACTS

260

THE PREVALENCE AND ANTIBIOTIC SUSCEPTIBILITY OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS BACTERIA IN PEDIATRIC PATIENTS IN LAS VEGAS

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Purpose of Study: Colonization and infection by community-associated resistant strains of *Staphylococcus aureus* are being reported in epidemic proportion globally. Community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) has been implicated in invasive infections in children, with wide geographical diversity in rates of colonization and infection. The purpose of this study was to determine the local prevalence of MRSA colonization in children and to characterize the MRSA isolates in the laboratory with regard to antibiotic susceptibility patterns, the presence of the *mecA* gene, and the presence of a specific virulence factor, the Pantone-Valentine leukocidin (PVL) gene.

Methods Used: Nasal swabs were collected at two pediatric clinics for a total of 497 children between 2 weeks and 21 years of age. A questionnaire was administered by the pediatric staff to collect demographic data, medical, family and social history. Samples were cultured onto 2 selective media for *Staphylococcus aureus* and MRSA. Potential MRSA isolates were further evaluated by real-time polymerase chain reaction (PCR) assays specific for the *mecA* and PVL genes, and for susceptibility to eight antibiotics by Kirby-Bauer disk diffusion on Mueller-Hinton medium.

Summary of Results: Culture results showed that MRSA was present in 15 of the 497 samples (3.0%). Four different antibiotic susceptibility profiles were observed among the MRSA isolates. All 15 MRSA isolates were positive for the presence of the *mecA* gene, and 10 MRSA isolates contained the PVL gene. During the same study period, a countywide hospital survey revealed that MRSA accounted for 34% of species isolated from infected patients. The most commonly identified risk factor among participants was having been hospitalized (18%), followed by antibiotic usage in the preceding 1 month (10.6%) and having a family member who works in a hospital/clinic (8.2%).

Conclusions: Discordance exists in the prevalence of MRSA colonization versus MRSA infection. Understanding the role that colonization plays in infection is needed to develop effective interventions to reduce the growing epidemic of MRSA infections.

261

SAFETY OF INTRAVENOUS ANTIBIOTIC THERAPY IN CHRONIC LYME DISEASE

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Purpose of Study: Treatment of Lyme disease is controversial. Although intravenous antibiotic therapy has been used to treat neurologic Lyme disease for up to 30 days, treatment beyond this length of time in patients with persistent neurologic symptoms is considered dangerous. The goal of our study was to evaluate the safety of intravenous antibiotic therapy in a cohort of patients with chronic neurologic Lyme disease.

Methods Used: We enrolled 199 consecutive patients in the study. All patients had significant neurologic symptoms and positive testing for *Borrelia burgdorferi* consistent with chronic neurologic Lyme disease. Patients were treated with intravenous antibiotics via a central venous

catheter (11 patients), a peripherally inserted central catheter (PICC line, 138 patients), a midline catheter (5 patients), a subcutaneous port (20 patients) or a peripheral catheter (25 patients). Standard intravascular device (IVD) care was administered to all patients, and monitoring for medication reactions and IVD infection, clotting or infiltration was performed on a weekly basis.

Summary of Results: For the 199 patients, the mean length of intravenous antibiotic treatment was 118 days (range, 7-750 days) representing 23,654 IVD-days. Seven patients (3.5%) experienced allergic reactions to the antibiotic medication, and two patients (1.0%) had gallbladder toxicity during the study. IVD complications occurred in 15 patients (7.5%) representing an incidence of 0.63 per 1000 IVD-days. Thirteen complications involved PICC lines and two involved ports. The IVD problems occurred an average of 81 days after initiation of treatment (range, 7-240 days). There were three suspected line infections for an incidence of 0.13 per 1000 IVD-days. Only one of the IVD infections was confirmed, and no resistant organisms were cultured from any patient. None of the IVD complications were fatal.

Conclusions: Prolonged intravenous antibiotic therapy is associated with low morbidity and no IVD-related mortality in patients with chronic neurologic Lyme disease. With proper IVD care, the risk of extended antibiotic therapy in these patients appears to be low.

Metabolism II

Concurrent Session

1:30 PM

Friday, February 1, 2008

262

AORTIC INSULIN SIGNALING IS PERTURBED IN A LARGE ANIMAL MODEL OF DIET-INDUCED OBESITY

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Purpose of Study: Cardiovascular disease risk is increased in insulin resistant disease states such as type 2 diabetes and the Metabolic Syndrome. However, it is unclear whether insulin signaling defects seen in systemic insulin resistance also occur in the vascular wall. We used a porcine model of diet-induced obesity to test the hypothesis that vascular insulin resistance can be induced in a model of systemic insulin resistance. We also determined whether downstream targets of insulin that may be influenced in insulin resistance would also be affected in this short term insulin resistance model.

Methods Used: Yucatan micropigs (n = 14) were fed a high fat diet (17% w/w simple sugars, 25% fat from coconut oil), or a control diet (2% w/w simple sugars, 4% fat). An IV glucose tolerance test (IVGTT) was performed at 6 months. At 7 months, 10 U/kg IV of insulin was administered before aortas were removed. IRS-1-associated PI 3-kinase activity was determined using P32 incorporation by thin-layer chromatography, and Western blotting for phosphorylated and total Akt, Egr-1 and CREB were performed.

Summary of Results: Pigs fed the high fat diet were more obese (p < 0.001), with mildly higher fasting blood glucoses (p < 0.001), free fatty acid levels (p < 0.05), triglycerides and blood pressure compared with control pigs. Systemic insulin sensitivity by IVGTT was significantly decreased in pigs fed the high fat diet. These pigs also had significantly lower IRS-1-associated PI 3-kinase activity (4.33 ± 5.2 vs. 10.91 ± 3.2 arbitrary units, p < 0.05). However, phosphorylated Akt (normalized to total