Culture related issues such as sexual ignorance and misconceptions appeared to be causally important in the absence of others factors, such as marital disharmony and anxiety.

Conclusions

Our data suggest that non-consummation is usually caused by mild or moderate vaginal spasm that is amenable to sex therapy. There is a need for informing health professionals, especially gynaecologists and general practitioners, that sex therapy is the preferred mode of managing vaginismus.

References


Chryseobacterium meningosepticum infections in a dialysis unit

Shalinie Perera¹ and C Palasuntheram²

Abstract

Background Chryseobacterium species are Gram-negative bacteria with an unusual antibiotic profile. Chryseobacterium meningosepticum is the species most commonly encountered as a human pathogen.

Objectives To study the microbiological, clinical and therapeutic features of C. meningosepticum infections in patients on dialysis, at Sri Jayewardenepura General Hospital (Teaching) (SJGH), and to trace the source of infections.

Design A retrospective descriptive study.

Setting Dialysis unit of SJGH.

Patient population Patients who underwent long term haemodialysis (HD) and manual intermittent peritoneal dialysis (IPD) in the dialysis unit.

Methods Clinical and microbiological records of patients with C. meningosepticum infections over a period of 2 years were reviewed retrospectively. Environmental screening was carried out to detect a possible source of infection.

Results Thirty five episodes of infection due to C. meningosepticum in 33 patients on HD and IPD were detected. There were 30 episodes of peritonitis, four of bacteremia and one of asymptomatic colonization of a PD catheter.

Isolates were resistant to aminoglycosides, chephalosporins and aztreonam, and sensitive to cotrimoxazole, vancomycin and rifampicin. They showed variable sensitivity to imipenem and ciprofloxacin. All except one patient had a favourable outcome. C. meningosepticum was
cultured from a sink in the dialysis unit, but the original source of the organism was not known.

Conclusion C. meningosepticum could be an important pathogen in a dialysis unit, and fluoroquinolones and vancomycin are effective as empiric therapy.

Introduction

Chryseobacterium spp. (= Flavobacterium spp.) were first recognised in 1959 associated with meningitis in infants [1]. These organisms are inhabitants of soil and water and they can live in municipal water supplies despite adequate chlorination [2,3]. They have been recovered from hospital environment often in conjunction with clusters of clinical isolates [2,3].

Chryseobacterium spp. are Gram-negative, thin, long and filamentous organisms. They grow well in 24 hours on blood agar and chocolate agar and at a much slower rate on MacConkey agar.

They are non-motile, catalase and oxidase positive, and weakly fermentative. Of importance is their unusual antibiotic sensitivity pattern, increasing resistance to antibiotics commonly used to treat infections caused by Gram-negative organisms (beta-lactams and aminoglycosides), but often susceptible to agents used to treat Gram-positive bacteria (rifampicin, clindamycin, cotrim-oxazole, vancomycin) [2,4,5].

They are of low virulence, capable of colonising the upper respiratory tract of humans, and acting as opportunistic pathogens [6]. They give rise to severe infections in immunocompromised hosts [7], and the species most commonly encountered as a human pathogen is C. meningosepticum [2,5]. Meningitis is the commonest infection in the neonates, whereas pneumonia and sepsis are the common syndromes in the postneonates [8]. In this study, 35 episodes of infection in patients undergoing IPD or HD in a dialysis unit were evaluated to study the microbiological, clinical and therapeutic features. Environmental screening was done to trace the source of infection.

Patients and methods

A retrospective review of clinical and microbiological records of patients on chronic peritoneal dialysis and haemodialysis, who were infected with C. meningosepticum over a period of 2 years was done. The patients, who had end stage renal disease, underwent HD or IPD in the dialysis unit two to three times a week. IPD was achieved manually without the use of a machine. This involved manual connection and disconnection of the dialysis fluid bottles to the catheter via a connecting set. HD patients were connected to the dialysis machine via a primary A-V fistula. A central venous catheter without cuffs was used when one A-V fistula failed to function.

Peritoneal fluid effluent that was cultured were from patients who either had signs and symptoms of peritonitis or a cloudy dialysate during dialysis. Blood cultures were done in patients who presented with septicemia, and peritoneal dialysis and central venous catheter tips were cultured routinely whenever they were removed. Specimens were cultured on blood and MacConkey agar, and the plates incubated overnight at 37°C. The resultant colonies were identified using standard microbial identification procedures and API 20E [9]. The antibiotic sensitivity assays were carried out by the disc diffusion method [10]. Zone diameter breakpoints for Enterobacteriaceae were used, and for vancomycin and rifampicin zone diameter breakpoints for staphylococci were used [10].

An environmental screening was done in an attempt to detect the possible source of infection. Swabs were taken from dressing trolleys, bedsides tables, sinks and from the inside of sink taps. The disinfectants such as povidone-iodine, surgical spirits used for cleansing the skin, and 70% alcohol solution used for storing peritoneal dialysis catheter stoppers and gluteraldehyde solution used to store the peritoneal dialysis catheter stilettes were also cultured.

Results

During the 2-year period, 35 infections caused by C. meningosepticum in patients on manual IPD and HD were detected. The 30 episodes of peritonitis detected in 28 patients during the period, constituted 19% of all episodes of peritonitis seen in patients who underwent peritoneal dialysis. The overall rate of infection in patients undergoing manual IPD in the dialysis unit was 11.1 episodes/patient year, according to an earlier study [11]. There were four episodes of septicaemia in patients undergoing HD, and one episode of asymptomatic colonisation of the PD catheter. Clinical, microbiological, and therapeutic features of these infections were studied.

Clinical features

Abdominal pain was the commonest symptom with peritonitis. Fever was a feature in six cases, diarrhoea in four and vomiting in two. One patient presented asymptomatic and the PD fluid of this patient was cultured because of turbidity of the effluent. The patients with septicaemia presented with fever with chills and rigours, and no one went into septicaemic shock.

Microbiological features

Culture on blood agar yielded grey round colonies, 2–3 mm in diameter after 18 to 24 h of incubation. The non-lactose fermenting colonies on MacConkey agar were much smaller. Gram stain showed Gram-negative, thin, long, non-motile bacilli. Biochemically they gave positive results in catalase, oxidase, aesculin hydrolysis and gelatin liquefaction tests and were non-fermentative. All isolates were resistant to ampicillin, augmentin, cefazidime, cefotaxime, aztreonam, gentamicin and amikacin.
All were sensitive to cotrimoxazole, vancomycin and rifampicin. All, except one isolate was sensitive to ciprofloxacin and 31 isolates were resistant to imipenem.

**Therapeutic features**

The outcome of different therapeutic regimens for peritonitis and bacteraemia are given in Tables 1 and 2.

**Table 1. Therapeutic outcome of peritonitis**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number treated</th>
<th>Number responded</th>
<th>Number not responding</th>
<th>Response not known</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin (intraperitoneal)</td>
<td>12</td>
<td>10</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Vancomycin (intraperitoneal)</td>
<td>7</td>
<td>6</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Rapid cycles of dialysis (without antibiotics)</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Table 2. Therapeutic outcome of septicaemia**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number treated</th>
<th>Number responded</th>
<th>Number not responding</th>
<th>Response not known</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin (intravenous)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vancomycin (intravenous)</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Environmental screening**

*C. meningosepticum* was cultured from one sink while all other environmental samples were negative. The organism was not found in the disinfectants tested.

**Discussion**

*C. meningosepticum* is best known for its ability to cause meningitis, pneumonia and sepsis in neonates and immunocompromised hosts, and peritonitis has only rarely been documented. This is surprising, considering the presence of risk factors in dialysis, such as frequent hospital admissions, presence of indwelling devices and severe kidney disease. Hence, 30 episodes of peritonitis in our study are significant.

Clinically, peritonitis was mild, with the majority presenting with only abdominal pain, in contrast to peritonitis caused by other Gram-negative bacteria, which is associated with severe disease [12]. Patients with septicaemia presented with only a low grade fever, not associated with shock, unlike in other Gram-negative sepsis.

The antibiotic sensitivity of the *C. meningosepticum* isolates of our study was similar to that reported in most studies, being resistant to aminoglycosides, cephalosporines, aztreonam and carbapenems, and sensitive to vancomycin, rifampicin, clindamycin, fluoroquinolones and cotrimoxazole.

The successful use of vancomycin and ciprofloxacin to treat patients with infections caused by *C. meningosepticum* have been previously documented [13]. However, clinical failure with vancomycin therapy has also been reported [14].

The use of vancomycin in dialysis-associated peritonitis due to *C. meningosepticum* is not documented and our study shows that vancomycin can be successfully used to treat sepsis as well as dialysis-associated peritonitis caused by it.

The most likely portal of entry of the organism is the lumen of the catheter in both HD and IPD, as it was observed that during connection and disconnection to the dialysis system, which was repeated several times in IPD, there was no adherence to strict aseptic procedures. Even though the organism was isolated from one of the sinks, the original source of *C. meningosepticum* in our dialysis unit remains unknown.

**Conclusion**

Our study suggests that *C. meningosepticum* could be an important pathogen in a dialysis unit, and ciprofloxacin and vancomycin are effective as empiric therapy.

**Acknowledgements**

We thank Dr. Chula Herath, Nephrologist, and the staff of the dialysis unit for their cooperation.

**References**

Blood lead levels of children before and after introduction of unleaded petrol

Manouri P Senanayake, MDA Rodrigo and R Malkanthi

Introduction

Nations around the world have banned lead in petrol [1]. The primary reason for removing lead additives from petrol is its adverse effect on human health. In response to evidence that blood lead concentrations approaching toxic levels in children and traffic policemen in Sri Lanka, tetraethyl lead was removed from petrol in the year 2002. Following this change a reduction in roadside atmospheric lead by 81.5%, 82% and 84% has been demonstrated at three locations in Colombo [2]. We report on blood lead levels of children before and after the discontinuation of leaded petrol.

Method

A cohort of children living near a traffic congested junction in Colombo had their blood lead levels determined one year after the change to unleaded petrol and were compared with levels of a comparable group studied when leaded petrol was still in use [3]. These two community based, cross-sectional descriptive studies were conducted in 1998 and 2003. Forty randomly selected, apparently healthy children between the age of one and fifteen years, who had been domiciled since birth within a radius of 0.5 km from the Barella junction comprised the 2003 study sample. Following ethical approval and informed consent, 2 ml of venous blood was collected into lead free containers from each child. Each blood sample was analysed for lead at the Occupational Hygiene and Safety Division of the Labour Department in Colombo by atomic absorption spectrometry.

The results were compared with blood lead levels of a cohort of 50 children investigated in 1998 [3]. The two cohorts were of the same socioeconomic background and locality, and of similar age and sex distribution.

In both studies lead was present in all samples analysed. In the 2003 study, the lead levels ranged from 1.67 μg/dL to 9.7 μg/dL and none of the samples contained lead levels above 10 μg/dL. This differed from the previous study of 1998 when 6% of the children had levels at or above 10 μg/dL. The mean blood value reported in 1998 was 5.21 μg/dL (SD ± 1.78 μg/dL) and in 2003, 4.33 μg/dL (SD ± 1.81 μg/dL). When lead levels of the total blood samples of the two studies were compared, there was a statistically significant reduction (Table 1). In both studies the levels were higher in boys. A notable