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CASE REPORT

Staphylococcus warneri MENINGITIS IN A PATIENT WITH *Strongyloides stercoralis* HYPERINFECTION AND LYMPHOMA. FIRST REPORT OF A CASE

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SUMMARY

A case of meningitis due to *Staphylococcus warneri* in a patient with a hyperinfection with *Strongyloides stercoralis* possibly associated with rituximab treatment for mantel cell lymphoma is reported for the first time in the literature. The patient was a 59-year-old woman, with a 3-year history of an apparently well controlled lymphoma after treatment with chemotherapy-immunotherapy and then immunotherapy alone, and diagnosis of strongyloidiasis. Meningitis was diagnosed by cerebrospinal fluid culture and tested with an automated plate system. The patient was successfully treated with vancomycin; although fever and productive cough persisted. Severe gastrointestinal symptoms and pneumonia developed three weeks later. Hyperinfection syndrome by *S. stercoralis* was diagnosed, with abundant larvae in feces and expectoration.

KEYWORDS: *Staphylococcus warneri;* Meningitis; Lymphoma; Rituximab; Hyperinfection.

INTRODUCTION

Staphylococcus warneri is a gram-positive member of the microbiota, normally found on the skin of humans and animals[4,13,15], in nasal cavities[17] and in the mouth[16]. It belongs to the group of *Staphylococcus* termed coagulase-negative which also includes the following species isolated from human clinical specimens: *S. epidermidis*, *S. haemolyticus*, *S. saprophyticus*, *S. lugdunensis*, *S. hominis*, *S. simulans*, *S. capitis*, *S. auricularis*, *S. cohnii, S. caprae* and *S. pasteuri*[12,18]. Human infections with these bacterial groups have been associated with immunosuppression[10], but also as contaminants of medical devices like catheters, prosthesis of various types, and artificial and native heart valves, producing bacteremia and localization of infection in several organs, as well as infections of the skin, eyes, urinary tract and nosocomial infections of immunocompromised patients and neonates[12,18]. They are also common contaminants of cultures[10], and they are able to produce biofilms on the surface of various materials, some of them of medical importance[6,7,9,14]. Literature review of reported infections with *S. warneri* include catheter related or unrelated bacteremias with or without immunosuppression, endocarditis[3,10,19], neonatal infections[4], discitis[1], bovine abortion[2] and canine meningoencephalitis[8]. In this paper we report the first human case of meningitis due to *S. warneri* in a patient hyperinfected with *Strongyloides stercoralis*, apparently related to rituximab treatment of a mantle cell lymphoma

CASE DESCRIPTION

A 59-year old Venezuelan female patient was admitted to a private hospital on February 6th, 2008 with clinical signs of meningitis, fever and productive cough. Laboratory culture of cerebrospinal fluid revealed the presence of bacterial colonies, which upon application to the diagnosis kit Vitek 1® (Biomerieux) a diagnosis of *Staphylococcus warneri* was made. Antibiogram revealed sensitivity to vancomycin, ciprofloxacin, clindamycin, erythromycin, gentamycin, tetracycline, TMP/SMX and linezolid, and resistance to oxacillin, amoxicillin, ampicillin, cephazolin and penicillin G.

She was treated with IV vancomycin with full recovery of neurological symptoms and was discharged, but fever and productive cough persisted. Examination of feces and expectoration was not carried out at the time. Three weeks later symptoms of intestinal pseudo obstruction and pneumonia prompted readmission and examination of feces and expectoration revealed the presence of abundant filariform larvae of *Strongyloides stercoralis.* The patient had been in treatment for mantle cell lymphoma with rituximab-HyperCVDA, high dose methotrexate and ARAC-C for five cycles between 2006 and 2007, and maintenance with rituximab alone every two months for one year and 10 months before admission.

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DISCUSSION

This is the first record to our knowledge of human meningitis due to *S. warneri*. The only previous report of meningeal localization of this bacterium has been in a dog[8]. Hyperinfection syndrome (or its disseminated form) in strongyloidiasis is usually associated with dissemination of bacteria from the intestine to other organs. These include *Escherichia coli, Klebsiella pneumoniae, Proteus mirabilis, Enterococcus faecalis, Pseudomonas* sp.*, Staphylococcus* coagulase-negative, *Streptococcus pneumoniae* and *Streptococcus bovis,* in addition to the fungus *Candida albicans*[11].

Our patient had two episodes of pneumonia due to *K. pneumoniae* associated with *Candida,* with larvae of *S. stercoralis* evidenced in the sputum. These findings, plus the observation of abundant larvae of *S. stercoralis* in the feces defined the condition of hyperinfection by this parasite, which appeared to be associated to the immunotherapy with rituximab, since it was the only drug the patient has been receiving for the last one year and 10 months before hyperinfection. Additionally, the use of rituximab has been associated with opportunistic infections, from which bacterial infection has been recorded as the most frequent[5].

How *S. warneri* managed to find its way to the central nervous system is uncertain, but it may have been collected from the skin during external autoinfection by filariform larvae of *S. stercoralis.* An important fact to this contention is that the patient had anal pruritus and pruritic lesions on the buttocks around the time of the meningitis process.

RESUMO

Staphylococcus warneri meningite em paciente com hiperinfecção com *Strongyloides stercoralis* e linfoma. Primeiro relato de caso

Caso de meningite por *Staphylococcus warneri* em paciente com hiperinfecção com *Strongyloides stercoralis,* possivelmente associada com tratamento de rituximab para linfoma de células do manto é relatada pela primeira vez na literatura. A paciente, mulher de 59 anos com história de três anos de linfoma aparentemente bem controlado com tratamento com quimioterapia-imunoterapia e, em seguida, somente imunoterapia e diagnóstico de estrongiloidíase. Meningite foi diagnosticada por cultura do líquido cefalorraquidiano e testada com sistema automatizado de placa. A paciente foi tratada com sucesso com vancomicina, embora a febre e a tosse produtiva não tenham desaparecido. Após graves sintomas gastrointestinais a paciente desenvolveu pneumonia três semanas mais tarde. Síndrome de hiperinfecção por *S. stercoralis* foi diagnosticada, com larvas abundantes nas fezes e expectoração.

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