

BRIEF COMMUNICATION

Listeria monocytogenes IN RENAL TRANSPLANT RECIPIENTS

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SUMMARY

Five cases of *Listeria monocytogenes* bacteriemia were observed from April to December 1985, among renal transplant recipients from the same hospital in São Paulo, Brazil. The patients were adults (mean age: 40.6 years), and the basic complain was fever, with no report of meningeal syndrome. Laboratory tests revealed the presence of two serovars, 1/2a and 4b, which were classified into three lysotypes. The four strains of serovar 4b showed the same antibiotype, with resistance to ceftioxin, clindamycin, oxacillin and penicillin.

KEYWORDS: *Listeria monocytogenes*; Serovar; Lysovar; Renal transplant.

INTRODUCTION

The clinical manifestations of *Listeria monocytogenes* human infection were fully defined since the first reports, and the predominant characteristics are bacteriemia or acute involvement of central nervous system^{2,4,16}. *L. monocytogenes* affects pregnant women and neonates, elderly, and persons with immunosystem dysfunction due drugs or illness, as the organ transplant recipient^{6,8,10}.

In some countries, like Brazil, the number of immunocompromised is raising, and there is no guidance to industries and regulatory agencies to prevent listeriosis. Consequently the number of *L. monocytogenes* infection in this population, is not well studied in this country^{3,7,18}.

In view of this gap, we studied the occurrence of *L. monocytogenes* in renal transplant recipients from a strictly bacteriological viewpoint.

MATERIAL AND METHODS

We analyzed hemocultures of five patients, recipients of live donor renal transplants from the same hospital. The samples were biochemical identified by the Central Laboratory of the University Hospital, School of Medicine, University of São Paulo and sent by the Bacteriology Section of Adolfo Lutz Institute, São Paulo, to the Bacterial Zoonoses Laboratory, Oswaldo Cruz Institute, FIOCRUZ, Rio de Janeiro, for conclusive identification. The cultures were accompanied by demographic and

limited clinical informations, in tubes containing nutrient agar. They were first analyzed for purity by passage on plates with Tryptose Agar and the colonies were selected by the oblique illumination technique by the method of Henry. Direct examination (Gram staining) was performed on the typical colonies. They were also tested for the catalase presence and transferred to semisolid agar kept at room temperature (26 °C) for 72 to 96 h for the typical mobility determination. After this screening, conclusive biochemical analysis was performed according to the method of ROCOURT *et al.*¹⁴.

The antigenic serogroups and serovars characterization was defined using somatic and flagellar antisera according to SEELIGER & HÖHNE¹⁷.

Susceptibility to antimicrobial agents was determined by the technique of soaked disks and deposition on Mueller-Hinton agar according to the specifications of BAUER *et al.*¹. The following disks (CECON) were used: ampicillin, cefalotin, ceftioxin, chloramphenicol, clindamycin, erythromycin, gentamicin, kanamycin, oxacillin, penicillin, rifampicin, trimethoprim-sulfamethoxazole, and tetracyclin. The disks were submitted to regular quality control using standard strains of *Escherichia coli* ATCC 25922 and *Staphylococcus aureus* ATCC 25923.

The pathogenic action of the strains was determined by the Anton test according to HOFER *et al.*⁴. Lysotypes were determined at the Pasteur Institute, Paris, with conventional typing system, described by ROCOURT *et al.*¹⁵.

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Table 1
Demographic characteristics and bacteriological aspects of the *L. monocytogenes* strains isolated from renal transplant recipients

Characteristics	Patients				
	1	2	3	4	5
Isolation date	24/04/85	14/08/85	19/09/85	14/10/85	-/12/85
Sex	F	F	M	F	F
Age (years)	55	47	35	26	40
Serovar	1/2a	4b	4b	4b	4b
Lysovar	[387-19-10-2685]*	[340 - 312 - 108 - 107 - 52 - 47 - 2389] [*] [3552 - 1444 - 1317 - 3274 - 2674 - 2671]		[340 - 312 - 108 - 107 - 47] [*] [2389 - 3552 - 1317 - 2671]	
Antibiotipe:					
Cefoxitin	S	R	R	R	R
Clindamycin	S	R	R	R	R
Oxacillin	S	R	R	R	R
Penicillin	S	R	R	R	R

S, Sensitive; R, Resistant.

*Phage numeration indicating lysotype profiles

RESULTS AND DISCUSSION

In Table 1 are cited some demographic and clinical characteristics which we had access, and the bacteriological aspects of the *Listeria* strains isolated. Analysis of *in vivo* pathogenicity by the experimental keratoconjunctivitis test (Anton's eye test) showed that all strains were positive. The mean age of the group was 40.6 years, it was quite similar to that reported by STAMM *et al.*²⁰. All patients were renal transplant recipients, but the interval between the transplantation and begin of symptoms were not described by their primary care physicians. It was noticed that fever was the basic complain of all the patients, without signs of symptoms of central nervous system involvement, thus indicating the primary bacteremia condition^{2,19,20}. The five recipients of renal transplants reported the use of immunosuppressive drugs and any patient was taking antibiotics during the previous 48h of the diagnose. Four patients were admitted to the hospital, while one was treated in outpatient clinic. All patients were cured with the appropriated antibiotic regimen.

The Table showed a prevalence of serovar 4b, in agreement with data observed by MACGOWAN *et al.*⁸, McLAUCHLIN *et al.*⁹ and STAMM *et al.*²⁰ in transplant recipients and by HOFER *et al.*⁴ in Brazil, in general. It is interesting to note that all strains of this serovar presented a uniform antibiotype profile and that listeria were found to be sensitive to the remaining antimicrobial agents analyzed, in agreement with previous report⁵.

Considering the similarity of the antibiotyping and phagetyping characteristics of the strains serovar 4b from patients n. 2, 3 and 4, we may raise the hypothesis of the same source, and it is also supported by temporal (monthly) occurrence. However, we should emphasize that the lysotypes characterized here, also including serovar 1/2a, have been classified by NUNES¹¹ as prevalent in strains from clinical human materials in the municipality of São Paulo, from 1975 to 1982. The

epidemiological difficulties are also compounded by the fact that the molecular analyses performed on strains number 2, 3 and 4 by PEREIRA *et al.*¹² and REZENDE¹³ revealed a marked genetic diversity among them.

In summary, *Listeria monocytogenes* is the etiologic agent of severe opportunistic infection in renal transplant recipients, mainly resulting from alterations in cellular immunity caused by immunosuppressive treatment^{6,8,20} added other possible risk factor as being *L. monocytogenes* enteric carrier, due to the ingestion of certain foods and age^{8,16}, or yet again due partial eradication of the agent and reinfection⁹. From a bacteriological viewpoint, we emphasize the importance of applying various methods in order to determine whether the isolates are similar or not and thus provide information for epidemiological investigations.

RESUMO

Listeria monocytogenes em pacientes pós-transplante renal

No período de abril a dezembro de 1985, foram observados cinco casos de listeriose em transplantados renais num mesmo hospital de São Paulo, SP. Os pacientes eram adultos (média de 40,6 anos) tendo como queixa básica a febre. Laboratorialmente, em todos foram reconhecidos *Listeria monocytogenes*, caracterizada por dois sorovares 1/2a e 4b e três lisotipos distintos. As amostras do sorovar 4b apresentaram o mesmo antibioprofilo: resistentes à cefoxitina, clindamicina, oxacilina e penicilina.

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