Nontyphoid *Salmonella* Extraintestinal Infections in Renal Transplant Recipients

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Dear Sir

Nontyphoid *Salmonella* (NTS) infection in man has been classically classified into four groups: gastroenteritis, bacteremia, focal infection, and asymptomatic carrier state [1]. Extraintestinal infections due to NTS have been reported more frequently in patients who have a markedly compromised cellular immunity such as those with malignancies [2] and acquired immunodeficiency syndrome [3]. Glucocorticoid therapy and immunosuppressive regimens are also recognized as predisposing factors [2, 4]. Despite this, there are a few reported series of NTS infections in renal transplant recipients (RTR) [4-7]. We describe our experience with NTS extraintestinal infections in RTR. Between January 1980 and December 1992, 330 renal transplants were performed at the Fundación Jiménez Díaz, a Spanish general teaching hospital with 700 beds. During this period, 7 (2.1%) RTR developed NTS extraintestinal infections. The outstanding characteristics of these 7 cases are summarized in table 1. There were 6 males

and 1 female, aged from 22 to 52 years (mean 39.5 years). The time of appearance of infection from grafts varied from 1 to 5 years. Immunosuppression therapy consisted of a combination of prednisolone and azathioprine in 4 cases, prednisolone and cyclosporine A in 2 cases and triple therapy in the remaining case. Patients 3 and 7 had been on pulse methylprednisone before the treatment. The microorganisms were isolated from urine (7 cases), blood (3), feces (3) and ascitic fluid (1). *Salmonella enteritidis*

Table 1. Nontyphoid *Salmonella* extraintestinal infections in RTR

Patient Age/sex

Diagnosis (time, years)1

Immunosuppressive therapy received Clinical data

Microorganism

Culture source

Therapy

Outcome

+ and – indicate that the patient did or did not receive therapy, respectively. IN = Interstitial nephritis; CGN = chronic glomerulonephritis; PCK = polycystic kidneys; UTI = urinary tract infection. 1 Time of appearance of infections from graft.

serotype enteritidis was recovered in 6 cases and Salmonella typhimurium in 1 case. Four patients had urinary tract infections and 3 others had bacteremia with bacteriuria. Bacteriuria persisted in patients 6 and 7 for 5 and 8 weeks, respectively, and a prolonged therapy was required in these 2 cases for more than 3 weeks. Patients were treated with ampicillin (4 cases), cotrimoxazole (2) and ceftriaxone (1). Salmonella infection was judged to be the immediate cause of death in patient 3, who had a bacteremic illness with a focal manifestation (peritonitis). The reported incidence of NTS infection in RTR varies from 0 to 3.9% [4, 8]. Urinary tract involvement is an important feature of NTS infections in RTR [5, 6]. Urine specimens from all of our patients yielded NTS. Possible predisposing factors which may explain the urinary involvement in this group of patients include their immunosuppressed state and abnormalities both in the original kidney and in the grafts [4, 7]. Ampicillin or cotrimoxazole have been recommended as drugs of choice for salmonellosis in RTR [4, 5, 7]. Recently, new fluoroquinolones and the newer cephalosporins have been employed successfully [4]. It seems that a prolonged course of therapy is required in such cases. All the patients in the present series were treated for a minimum period of 2 weeks. Infections by NTS may contribute to rejection and graft loss in 10% of the cases [4, 7]. However, none of our patients suffered kidney rejection after NTS infection. Mortality in our series (1/7) was similar to that reported previously by others [4, 5, 7]. The bacteremic illness associated with major focal manifestations has a poor prognosis as occurs in one of our cases and a previously reported one [4, 5]. NTS infections should be regarded as a cause of morbidity and mortality among RTR.

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