

ASYMPTOMATIC CARRIAGE OF GASTRO-INTESTINAL PATHOGENS IN RENAL TRANSPLANT RECIPIENTS: EPIDEMIOLOGY AND RISK FACTORS



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INTRODUCTION AND AIMS:

The recent contribution of molecular biology tools to microbiological diagnosis of severe diarrhea in kidney transplant recipients has identified a large number of infectious etiologies¹. However, little is known about asymptomatic carriage of enteric pathogens in this immunocompromised population.

The aim of this study was to assess epidemiology and risk factors of asymptomatic carriage of enteropathogens in adult kidney transplant recipients.

METHODS:

Fifty-seven asymptomatic adult kidney transplant recipients admitted in the nephrology department of the Reims university hospital (France) from March to November 2012 were included. Twenty-eight were sampled six months after resolution of severe diarrhea while 29 had no clinical history of diarrhea and were matched for age, sex and immunosuppressive therapy. Stool samples were tested with three commercially available multiplex PCR assays (xTAG GPP®, Luminex molecular diagnostics, Toronto, Canada; RIDA®GENE Norovirus I & II, RIDA®GENE EHEC/EPEC, r-biopharm, Darmstadt, Germany; CLART Enterobac®, Genomica, Madrid, Spain) allowing the detection of enteric pathogenic bacteria, parasites and viruses. Demographic profiles, clinical and biological data, and immunosuppressive therapy of all investigated patients were recorded.

RESULTS

Enteric pathogens were detected in 15/57 asymptomatic patients (26.7%) including 9/28 (32.1%) patients with history of diarrhea and 6/29 (20.7%) patients without (figure 1). The pathogens detected were *Norovirus* (n=7), *Campylobacter* sp. (n=3), Shiga toxin-producing *Escherichia coli* (n=2), *Salmonella* spp., *Clostridium difficile* and *Entamoeba histolytica* (n=1). Among renal transplant recipients sampled six months after resolution of diarrhea of infectious cause (17/28), only 4/17 (23.5%) were detected positive for the same pathogen (*Norovirus* n=3 and *Campylobacter* spp n=1). Asymptomatic infected patients were mainly women ($P=0.05$), treated without ciclosporin ($P=0.04$) and had a significantly lower rate of CD19-positive lymphocytes than asymptomatic non-infected patients ($P=0.01$) (table 1).

	Patients with enteropathogen carriage (n = 15)	Patients without enteropathogen carriage (n = 42)	p
Mean age (years)	57	54	NS
Female	8 (53%)	10 (24%)	0.05
Induction therapy:			1
- Antithymocyte globulins	5 (33%)	15 (36%)	
- Basiliximab	10 (67%)	26 (62%)	
Immunosuppressive treatment:			
- Ciclosporine	4 (27%)	24 (57%)	0.04
- Tacrolimus	5 (33%)	13 (31%)	1
- Everolimus	2 (13%)	2 (5%)	0.28
- Sirolimus	3 (20%)	3 (7%)	0.18
- MMF	10 (67%)	33 (79%)	0.49
- Corticoids	4 (27%)	6 (14%)	0.43
Other treatments:			
- Proton-pump inhibitor	6 (40%)	22 (26.3)	0.41
- Antibiotics	4 (27%)	4 (5.3)	0.19
AUC MMF (mg/h/L)	29	39	0.01
To Ciclosporine (µg/L)	128	120	0.97
To Tacrolimus (µg/L)	6.9	6.6	0.11
Leukocytes (G/L)	5447	6288	0.13
Neutrophils (G/L)	3620	4068	0.18
Lymphocytes (G/L):	1227	1534	0.08
- CD3	966	1043	0.15
- CD4	429	585	0.12
- CD8	467	425	0.29
- CD19	74	142	0.01
Gamma globulins (g/L)	9.08	8.94	0.80

Table 1: Comparison between kidney transplants recipients with and without enteropathogen carriage.

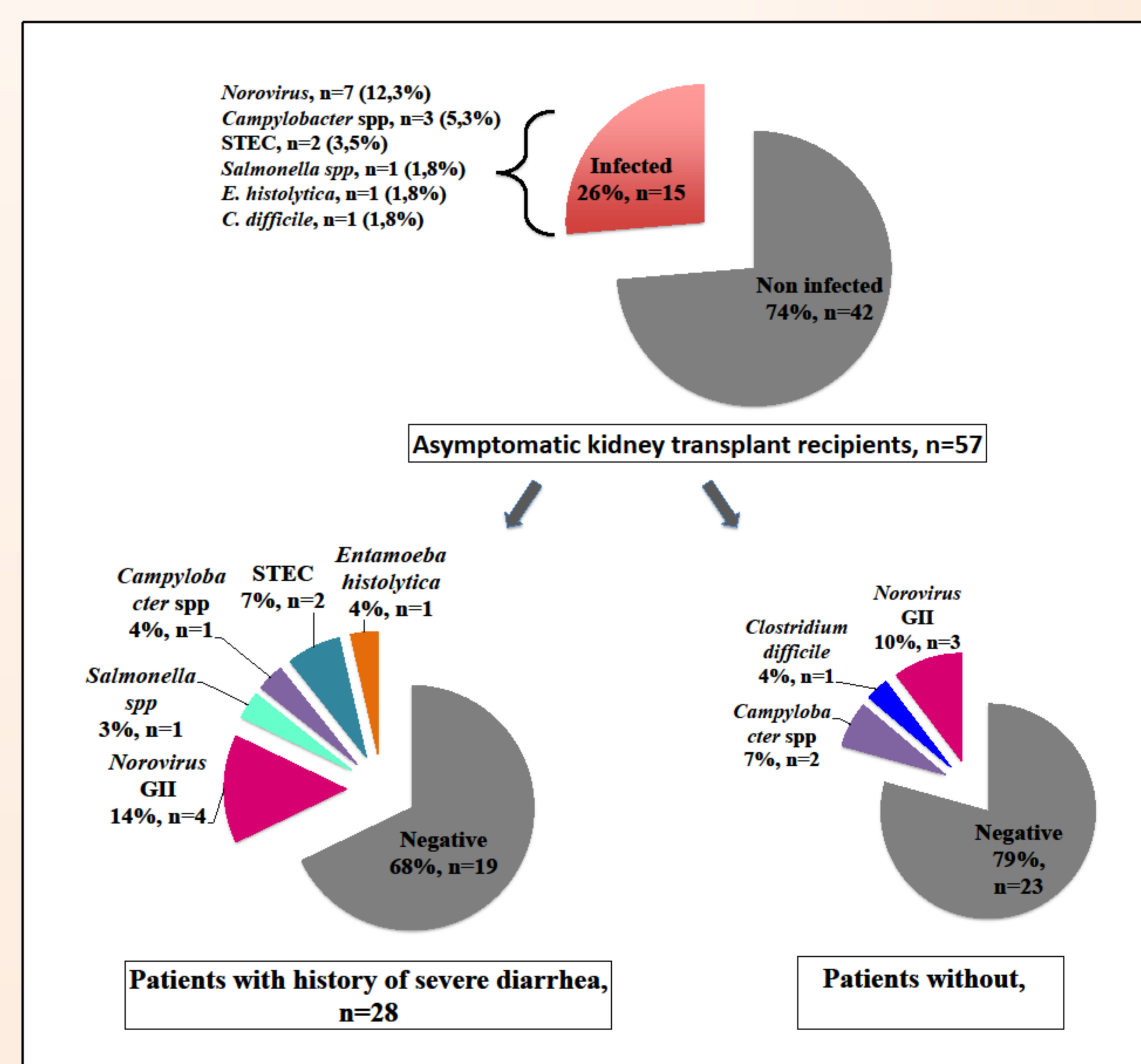


Figure 1: Comparison of enteric pathogens detection in asymptomatic adult kidney transplant recipients, with or without a history of acute severe diarrhea

CONCLUSION:

A quarter of the patients enrolled in this study were asymptomatic shedder of enteric pathogens. This high rate of carriage appeared to be related to a deficiency of humoral immunity and could potentially led to the recurrence of diarrhea as well as to the spread of these pathogens to other patients, medical staff and family.

1. Coste JF, Vuiblet V, Moustapha B, Bouin A, Lavaud S, Toupance O, de Rougemont A, Benejat L, Megraud F, Wolak-Thierry A, Villena I, Chemla C, Le Magrex E, de Champs C, Andreoletti L, Rieu P, Leveque N. Microbiological diagnosis of severe diarrhea in kidney transplant recipients by use of multiplex PCR assays. J Clin Microbiol. 2013 Jun;51(6):1841-9.