

2 **JC Virus, *Helicobacter pylori*, and Oesophageal Achalasia:**  
3 **Preliminary Results from a Retrospective Case–Control Study**

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9 To the Editor:

10 JC virus (JCV) is a member of the polyomavirus family.  
11 It infects humans worldwide, and 90 % of the population  
12 carry antibodies to the virus by adult life [1]. The initial  
13 infection is asymptomatic, but it may become persistent.  
14 JCV DNA is frequently present in the upper and lower  
15 gastrointestinal tract of healthy adults [2, 3].

16 Several studies have suggested the involvement of cer-  
17 tain DNA viruses in chronic gastrointestinal motility dis-  
18 orders such as chronic intestinal pseudo-obstruction [4–7].  
19 Although a close causal relationship between neurotropic  
20 viruses and enteric neuromuscular lesion is not easily  
21 demonstrated, the identification of neurotropic viruses and/  
22 or molecular components associated with them may help to  
23 clarify their role in the highly severe gastrointestinal  
24 disease.

A1 **Electronic supplementary material** The online version of this  
A2 article (doi:10.1007/s10620-012-2485-9) contains supplementary  
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The aim of our study was to assess the prevalence of JC 25  
virus in a cohort of patients with oesophageal achalasia, 26  
comparing it with a cohort of healthy subjects, in order to 27  
evaluate whether JC virus could be play a role in this 28  
disease; we evaluated also the relationship between JC 29  
virus and *Helicobacter pylori* (HP). 30

In the cohort of patients with achalasia, 12 out of 15 31  
(80 %) had a positive JC-PCR, while in the cohort of 32  
healthy controls, ten out of 15 (66.7 %) had a positive 33  
JC-PCR (chi-square 0.68, odds ratio 2,  $p = 0.409$ ). In the 34  
cohort of patients with achalasia, 13 out of 15 (86.7 %) had 35  
a positive hystologic HP test, while in the cohort of healthy 36  
controls, eight out of 15 (53.3 %) had a positive hystologic 37  
HP test. Curiously, in the entire cohort of patients, JC virus 38  
infection proved to be protective against HP infection (chi- 39  
square 11.35, odds ratio 0.09,  $p = 0.0008$ ). The prevalence 40  
of HP and JC virus infection in the entire cohort is shown 41  
in Table 1. 42

Because of the known neuropathic capability of JC 43  
virus, and its frequent presence in the upper gastrointestinal 44  
tract, as well as in the gut, we proposed that JCV might be 45  
detectable in tissues of patients with oesophageal achalasia, 46  
and possibly be involved in the pathogenesis of this dis- 47  
ease. However, in this study the difference between the 48  
prevalence of JC virus in achalasia patients and in healthy 49  
controls was not statistically significant, probably due to 50  
the small number of cases and control subjects. 51

Few data are available about the relationship between JC 52  
virus and HP. Selgrad and coworkers, in their case–control 53  
study, showed that JC virus is present in HP induced gas- 54  
tritis and gastric cancer [9]. By contrast, the findings of our 55  
case–control study show that JC virus could be a protective 56  
factor against HP infection, though the biological and 57  
pathophysiological reasons for this microbiological inter- 58  
ference are not yet known. 59

**Table 1** Distribution of JC virus and HP infection in the entire cohort of patients

Parameter	HP positive	HP negative
JC virus positive	5	15
JC virus negative	6	4

HP *Helicobacter pylori*

60 In conclusion, despite the retrospective nature of our  
 61 study and the small number of patients involved, we sug-  
 62 gest that actually the basis to consider JC virus as an eti-  
 63 ologic factor in pathogenesis of oesophageal achalasia is  
 64 not significant. Curiously, JC virus could be a protective  
 65 factor against HP infection, though the reasons of this  
 66 antagonism are not fully elucidated. Further prospective  
 67 case-control studies, with a larger number of patients, are  
 68 needed to clarify the possible etiopathogenetic role of JC  
 69 virus in oesophageal achalasia and the relationship between  
 70 JC virus and HP.

71 The methods for the letter are available in supplemen-  
 72 tary material.

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