

# Xenotropic murine leukaemia virus-related virus is not found in peripheral blood cells from treatment-naive human immunodeficiency virus-positive patients

F. Maggi<sup>1</sup>, D. Focosi<sup>2</sup>, L. Lanini<sup>1</sup>, S. Sbranti<sup>1</sup>, P. Mazzetti<sup>1</sup>, L. Macera<sup>1</sup>, S. Davini<sup>2</sup>, M. De Donno<sup>2</sup>, M. L. Mariotti<sup>2</sup>, G. Antonelli<sup>3</sup>, F. Scatena<sup>2</sup> and M. Pistello<sup>1,4</sup>

1) Virology Unit, Pisa University Hospital, 2) U.O. Immunoematologia SSN, Azienda Ospedaliera Universitaria Pisana, Pisa, 3) Laboratory of Virology, Department of Molecular Medicine, 'Sapienza' University of Rome, Rome and 4) Retrovirus Centre and Virology Section, Department of Experimental Pathology, University of Pisa, Pisa, Italy

## Abstract

The human pathogen xenotropic murine leukaemia virus-related virus (XMRV) has been tentatively associated with prostate cancer and chronic fatigue syndrome. Unfortunately, subsequent studies failed to identify the virus in various clinical settings. To determine whether XMRV circulates in humans and the relationship with its host, we searched for the virus in 124 human immunodeficiency virus-infected patients who might have been exposed to XMRV, might be prone to infection as a result of progressive immunodeficiency, and had not yet been treated with antiretroviral drugs. Using nested PCR and single-step TaqMan real-time PCR, both designed on the XMRV *gag* gene, we could not find any positive samples. These findings add to the growing amount of scepticism regarding XMRV.

**Keywords:** HIV, peripheral blood cells, real-time PCR, treatment-naive, xenotropic murine leukaemia virus-related virus

**Original Submission:** 18 March 2011; **Revised Submission:** 19 April 2011; **Accepted:** 6 May 2011

Editor: T. A. Zupanc

**Article published online:** 18 May 2011

*Clin Microbiol Infect* 2012; **18**: 184–188

10.1111/j.1469-0691.2011.03580.x

**Corresponding author:** F. Maggi, Virology Unit, Pisa University Hospital, Azienda Ospedaliera Universitaria Pisana, Via San Zeno, 35–37, 56127 Pisa, Italy  
**E-mail:** fabrizio.maggi63@gmail.com

## Introduction

Xenotropic murine leukaemia virus-related virus (XMRV) is a novel gamma retrovirus of humans that was first discovered in 2006 [1]. Originally, the virus was isolated from biopsy specimens of prostate cancer patients, and was believed to play an aetiological role in that disease; however, subsequent studies failed to reveal the presence of XMRV in large numbers of patients with prostate cancer, possibly because of uneven geographical distribution of the infection and/or differences in the sensitivity of the PCR methods used for detection [2–8]. In the past 4 years, several reports have documented the presence of XMRV in blood and respiratory secretions of subjects with chronic fatigue syndrome, adults

with respiratory illness and transplant patients at rates ranging from 2% to 86%, suggesting that the virus is associated with various human diseases or is an endogenous virus that may take advantage of chronic inflammation processes or other underlying diseases (Table 1) [9–17]. To date, however, the aetiological role of XMRV, if any, is far from being proven. Moreover, the finding that tissues and biological fluids of healthy subjects also carry XMRV has led to scepticism regarding the real pathogenicity of the virus [5,6,9–11,13,15,16,18].

Many aspects of the natural history and pathogenesis of XMRV are still poorly understood [19]. These include the prevalence in the general population and in categories of subjects who may have greater chances of acquiring XMRV infection, and the relationship that the virus establishes with the infected host. Among these individuals, those with human immunodeficiency virus (HIV) infection are particularly at risk, as they have most likely been exposed to other infectious agents, and, if acquired, XMRV could have taken advantage of the progressive immunodeficiency in order to establish a persistent infection in the host.

**TABLE 1.** Summary of studies carried out to detect xenotropic murine leukaemia virus-related virus in patients affected by various diseases and healthy controls; all studies were performed on peripheral blood leukocytes unless otherwise specified

Disease	No. of samples	Prevalence (%)	Method	Ethnicity	References
HIV-positive	124	0	Nested PCR and real-time PCR for <i>gag</i>	Italy	Present study
Prostate cancer (biopsies)	800	0	Real-time PCR for <i>gag</i> for and immunohistochemistry for Gag and Env cleavage products	USA	Aloia et al. [2]
	86	40 (RNase L QQ) 1.5 (RNase L RQ)	Real-time PCR for <i>gag</i>	USA	Urisman et al. [1]
	74	4	Real-time PCR	The Netherlands	Verhaegh et al. [8]
	589	0	Nested PCR and RT-PCR	Germany	Hohn et al. [6]
	334	6–23	Real-time PCR and immunohistochemistry	USA	Schlaberg et al. [7]
Chronic fatigue syndrome	105	1	Nested PCR	Germany	Fischer et al. [5]
	144	22	Nested PCR for <i>env</i>	USA	Danielson et al. [4]
	39		Gag- and Env-ELISA assays; nested PCR	Germany	Hohn et al. [31]
	170	0	Real-time PCR	UK	Groom et al. [13]
	37	86.5	Nested PCR for <i>gag</i>	USA	Lo et al. [10]
	76	0	Real-time PCR assay for integrase gene and/or a nested PCR for <i>gag</i>	The Netherlands	van Kuppeveld et al. [14]
	65	0	Multiplex real-time PCR and RT-PCR	China	Hong et al. [15]
	102	0	Western blot, ELISA; <i>gag</i> and <i>pol</i> nested PCR	USA	Switzer et al. [16]
	101	75			Mikovits et al. [12]
	186	0	Nested PCR	UK	Erlwein et al. [17]
	32	0	Nested PCR assay for <i>gag</i>	USA	Henrich et al. [29]
	101	67	Nested PCR assay for <i>gag</i>	USA	Lombardi et al. [9]
Multiple sclerosis with fatigue symptoms	112	0	Gag- and Env-ELISA assays; nested PCR	Germany	Hohn et al. [31]
Autistic spectrum disorders	230	0	Real-time PCR and serology	Italy and South Carolina	Satterfield et al. [18]
HCV-positive	67	0	PCR for <i>gag</i> or <i>env</i>	United Kingdom	Barnes et al. [30]
HIV-positive	101 (acute)	0	PCR for <i>gag</i> or <i>env</i>	Switzerland and Spain	Barnes et al. [30]
	133 (chronic)				
	43	0	Nested PCR assay for <i>gag</i>	USA	Henrich et al. [29]
	199 plasmas	0	Nested PCR or RT-PCR	Cameroon and Uganda	Tang et al. [28]
	19 PBMCs		and real-time PCR assays		
	50 culture supernatants				
	54 (seminal plasma)	0	Nested PCR for <i>gag</i>	The Netherlands	Cornelissen et al. [27]
Rheumatoid arthritis	97	0	Nested PCR assay for <i>gag</i>	USA	Henrich et al. [29]
Spondyloarthritis	19	0	Nested PCR for <i>env</i>	France	Jeziorski et al. [32]
Paediatric haematological, neurological or inflammatory pathologies	62	0	Nested PCR for <i>env</i>	France	Jeziorski et al. [32]
Paediatric respiratory diseases (nasopharyngeal aspirates)	80	0	Nested PCR for <i>env</i>	France	Jeziorski et al. [32]
Respiratory tract infection without underlying disease	42 (sputum, nasal swab)	2.3	Nested PCR or real-time PCR	Germany	Fischer et al. [11]
Respiratory tract infection without underlying COPD	31 (BAL)	3.2	Nested PCR or real-time PCR	Germany	Fischer et al. [11]
Haematopoietic stem cell or solid organ transplant	161 (BAL, TS)	9.9	Nested PCR or real-time PCR	Germany	Fischer et al. [11]
	26	0	Nested PCR assay for <i>gag</i>	USA	Henrich et al. [29]
Patients presenting for medical care	95	0	Nested PCR assay for <i>gag</i>	USA	Henrich et al. [29]
Healthy controls	40	0	<i>gag</i> - and <i>env</i> -ELISA assays; nested PCR	Germany	Hohn et al. [31]
	70 (prostate biopsy)	1.3	Nested RT-PCR	Germany	Fischer et al. [5]
	62 (BAL, throat swab)	3.2	Nested PCR or real-time PCR	Germany	Fischer et al. [11]
	97	0	Western blot, ELISA; <i>gag</i> and <i>pol</i> nested PCR	USA	Switzer et al. [16]
	44	6.8	Nested PCR for <i>gag</i>	USA	Lo et al. [10]
	218	3.7	Nested PCR for <i>gag</i>	USA	Lombardi et al. [9]
	395	0	Quantitative PCR	UK	Groom et al. [13]
	204	0	Real-time PCR and serology	Italy and USA	Satterfield et al. [18]
	65	0	Multiplex real-time PCR and RT-PCR	China	Hong et al. [15]

BAL; bronchoalveolar lavage; COPD, chronic obstructive pulmonary disease; HCV, hepatitis C virus; HIV, human immunodeficiency virus; PBMC, peripheral blood mononuclear cell; QQ, R462Q-homozygous; RQ, R462Q- heterozygous; TS, tracheal secretion.

Download English Version:

<https://daneshyari.com/en/article/3397355>

Download Persian Version:

<https://daneshyari.com/article/3397355>

[Daneshyari.com](https://daneshyari.com)