

Antibody response against *Chlamydia trachomatis* in patients with Lymphogranuloma venereum (LGV)

S. Dorn⁽³⁾, G. Mohrmann⁽²⁾, E. Soutschek⁽³⁾, T. Meyer⁽¹⁾

(1) Institute of Medical Microbiology, University Medical Center Hamburg-Eppendorf, D-20251 Hamburg, Germany

(2) Laboratory Lademannbogen MVZ GmbH, D-22339 Hamburg, Germany

(3) MIKROGEN GmbH, D-82061 Neuried, Germany

Introduction

Lymphogranuloma venereum (LGV) is a sexually invasive transmitted infection caused by *C. trachomatis* serovars L1, L2 or L3. Confirmation of LGV diagnosis requires identification of these serovars. *C. trachomatis* typing usually depends on molecular analysis of clinical material from suspicious lesions. Serology may also be used for LGV diagnosis, especially in cases where adequate material for molecular testing is difficult to obtain, for instance in stage of lymphadenopathy of the inguinal LGV syndrome. Until recently, the complement fixation test (CF) has been used to support LGV diagnosis. However, CF is genus-specific and does not differentiate between *C. trachomatis*, *C. pneumoniae* and *C. psittaci*, and it is not able to detect IgA-antibodies. We have used a novel line assay based on selected immunogenic and specific antigens (*recomLine Chlamydia*, Mikrogen GmbH, Neuried, Germany) to analyze the IgA- and IgG-antibody response in 22 patients with confirmed LGV.

Materials & Methods

Confirmation of the LGV diagnosis: The diagnosis of LGV infection with serotype L2 was confirmed by sequencing of the Momp I, II, and III regions of the collected genital swab samples or genital biopsat samples.

Characterisation of serum samples by using *recomLine Chlamydia* immunoassay (Mikrogen GmbH, Neuried, Germany): Serum samples were collected 3 weeks after clinical diagnosis and analysed by *recomLine Chlamydia* based on the following recombinant antigens MOMP, Omp2, TARP, CPAF and Hsp60 in a line immunoassay format (Mikrogen GmbH, Neuried, Germany) according to the manufacturer's instructions. Samples were tested beside for IgG also for IgA-antibodies.

IgG-Follow-up examinations of a *Chlamydia trachomatis* infection (LGV) (L2-serotype) within 3 years

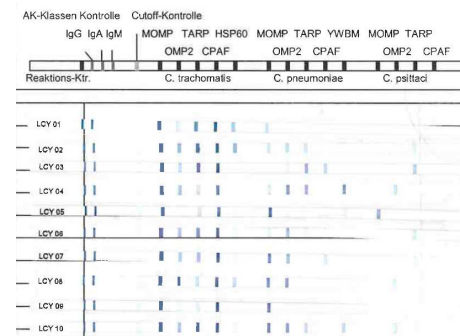


Fig. 2b – IgG-antibody response to an invasive *C. trachomatis* infection with LGV-infection (L2 serotype) (see Fig 2a): Follow up examination from 2005 – 2008

strip number	date of sample collection	strip number	date of sample collection	strip number	date of sample collection
LCY 1	02.06.2005	LCY 4	24.10.2006	LCY 8	07.05.2008
LCY 2	03.08.2005	LCY 5	17.01.2007	LCY 9	20.06.2008
LCY 3	16.03.2006	LCY 6	04.06.2007	LCY 10	01.09.2008
		LCY 7	31.01.2008		

Fig. 2c –Table 2: Serological follow-up: dates of LGV-sample collection (patient Fig 2b)

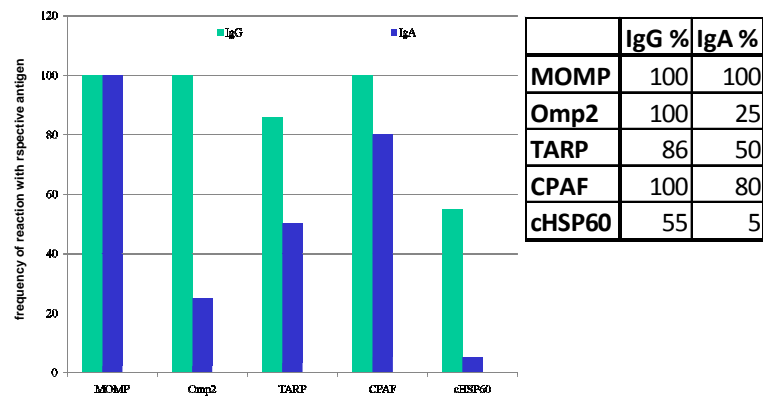


Fig. 3 – Anti-*C. trachomatis* reactivity-pattern in samples from 22 *Chlamydia trachomatis* patients with the clinical picture of LGV and the reactive recombinant antigens MOMP, Omp2, TARP, CPAF and cHSP60 in %

Antigen	
MOMP <i>C. trachomatis</i> <i>C. pneumoniae</i> <i>C. psittaci</i>	„major outer membrane protein“; immunodominant outer membrane antigen;
OMP2 <i>C. trachomatis</i> <i>C. pneumoniae</i> <i>C. psittaci</i>	„outer membrane protein 2“; outer membraneprotein of high cysteine concentration; universal marker for a infection with Chlamydia
TARP <i>C. trachomatis</i> <i>C. pneumoniae</i> <i>C. psittaci</i>	„translocated actin-recruiting protein“; binding actin, involved in absorption in the target cell
CPAF <i>C. trachomatis</i> <i>C. pneumoniae</i> <i>C. psittaci</i>	„chlamydial protease-like activity factor“; virulence factor; host protein processing protease
HSP60 <i>C. trachomatis</i>	„heat shock protein 60“, discussed as indicator for chronically inflammable ascending infection (e.g. tubal factor infertility, reactive arthritis) with <i>Chlamydia trachomatis</i>
YWBM <i>C. pneumoniae</i>	hypothetical protein; not existing for <i>C. trachomatis</i> and for <i>C. psittaci</i>

Fig. 1 –Table 1: recombinant antigens used in *recomLine Chlamydia*

Results

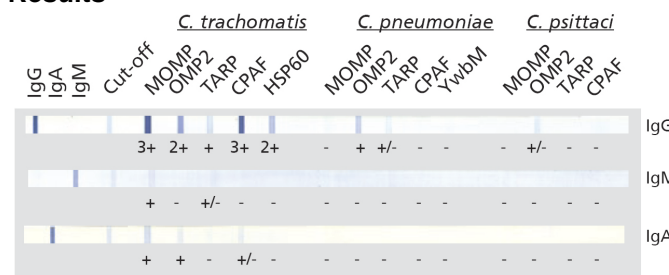


Fig. 2a – Antibody pattern of an invasive *C. trachomatis* infection with LGV-infection (L2 serotype) using the *recomLine Chlamydia* examining the serum of a male patient with rectal ulcer and confirmed LGV by sequencing of rectal swab material. The positive IgA and IgG-response suggest an existing *Chlamydia trachomatis* infection. The weak antibody response against *C. pneumoniae* result from a former Infection (high prevalence in Germany and in northern countries)

Discussion / Conclusions

- Lymphogranuloma venereum (LGV) is generally associated with a strong IgA- and IgG-antibody response over years which can be detected by using the *recomline Chlamydia* assay
- Beside MOMP the new antigens CPAF and TARP – especially for IgG - are specific and helpful antigens to confirm a long lasting infection whereas Hsp60 seems not to be helpful
- seronegative results are highly predictive to exclude LGV in case of suspicious lesions
- On the other hand serology may be helpful when the material for PCR is difficult to obtain especially for lymphadenopathy of inguinal LGV
- Serology is a helpful tool examining chronic cases of LGV because the PCR results of anogenital swabs may be negative during follow-up examinations