

O321

2-hour Oral Session

Still thriving at the host's expense: parasitic infection

**Is there an easier way to differentiate phases of *Toxoplasma gondii* infection in pregnant women?**

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**Background:** Detection of the moment of infection with *T.gondii* in pregnant women plays a key role in determining the risk of transmission to the foetus. Best diagnostic approach makes use of testing before planned pregnancy and in the beginning of the 1st trimester. Sometimes the first screening is only done later in pregnancy or close to term, when even the lack of specific IgM and high IgG avidity using traditional immunodiagnostic methods with native antigen does not allow to exclude early *T.gondii* infection. Furthermore, diagnosis of acute toxoplasma infection often requires collection of two blood samples in 2-3 week period and demonstration of significant rise in IgG titres. The aim of the study was to show the possibilities of using recomLineToxoplasma®(Mikrogren) test based on recombinant antigens and immunoblot technique in detection of the time of infection in pregnant women.

**Material/methods:** Women analysed were between ages 26-35, in whom IgG, IgM presence/titers and IgG avidity was tested using ELISA-VIDITEST Toxo IgG/IgM®(Vidia) and ELISA Avidity-TOXO®(EUROIMMUNE). In each patient, presence of IgG and IgM was tested additionally for recombinant *T.gondii* antigens: ROP1c, MIC3, GRA7, GRA8, p30, MAG1, GRA1, rSAG1 and IgG avidity for p30, MAG1, GRA1, and rSAG1 using recomLine test. Results were read automatically and interpreted with BLOTrix-Leader and phases of infection (I, II, III, IV) were determined accordingly. To show the usefulness of the test we selected 3 different patients.

**Results:** First patient in her 32 week of pregnancy (hbd), with standard ELISA testing showed border values for IgM (1.0), positive IgG (192 IU/ml) and high IgG avidity (87%). RecomLine test results showed: positive IgM for ROP1c, high IgG avidity to p30 and GRA1 and low to rSAG1, and pointed to II phase of infection (last 3-6 months), which correlated to acute toxoplasmosis during pregnancy. In the second patient (30hbd), standard ELISA testing showed IgG of 198 IU/ml, no IgM and IgG avidity of 80%. RecomLine test showed high IgG avidity to p30, MAG1, GRA1 and rSAG1 as well as IgM, which confirmed chronic infection (IV phase of infection; >12 months) and excluded toxoplasma infection in pregnancy. In the third patient (17hbd), standard ELISA showed specific IgM (1.7), IgG (187 IU/ml) and borderline avidity of 47%. RecomLine test showed: positive IgM for ROP1c and GRA8 and low IgG avidity to p30 and GRA1, which in fact pointed to phase I of infection (last 0-3 months). Results are shown in Fig.1.

**Conclusions:** RecomLine Toxoplasma test, facilitates differentiation of acute from chronic *T.gondii* infection and allows to determine the time of infection and the risk of transmission to the foetus, without the need to collect consecutive blood samples. It may be useful especially in pregnant women, who only have their first diagnostic toxoplasma screening done in the II or III trimester of pregnancy.

Figure 1. Results of standard ELISA vs. recombinant antigen testing for *Toxoplasma gondii* in 3 pregnant patients. Legend: hbd (hebdomas), i.e. week of pregnancy.

ELISA IgG/IgM VIDITEST		
ELISA AVIDITY		
Results		
IgM	border value	ratio: 1.0
IgG	positive	192 IU/ml
IgG avidity	high	87%

**PATIENT no. 1, 32 years-old  
32 hbd**

recomLine Toxoplasma test		
Results		
IgM	ROP1c	positive
IgG	GRA7	positive
	GRA8	positive
	p30	positive
	MAG1	positive
	GRA1	positive
	rSAG1	positive
IgG avidity	high to p30	
	low to MAG1	
	high to GRA1	
	low to rSAG1	
Result interpretation		
<b>Phase II</b>		
<i>(3-6 months since infection)</i>		
→ <i>Risk of prenatal infection</i>		

ELISA IgG/IgM VIDITEST		
ELISA AVIDITY		
Results		
IgM	negative	ratio: 0.74
IgG	positive	198 IU/ml
IgG avidity	high	80%

**PATIENT no. 2, 35 years-old  
30 hbd**

recomLine Toxoplasma test		
Results		
IgM	ROP1c, MIC3, GRA7, GRA8	negative
IgG	ROP1c	positive
	GRA7	positive
	GRA8	positive
	p30	positive
	MAG1	positive
	GRA1	positive
	rSAG1	positive
IgG avidity	high to p30	
	high to MAG1	
	high to GRA1	
	high to rSAG1	
Result interpretation		
<b>Phase IV</b>		
<i>(&gt;12 months since infection)</i>		
→ <i>No risk of prenatal infection</i>		

ELISA IgG/IgM VIDITEST		
ELISA AVIDITY		
Results		
IgM	positive	ratio: 1.7
IgG	positive	187 IU/ml
IgG avidity	borderline value	47%

**PATIENT no. 3, 26 years-old  
17 hbd**

recomLine Toxoplasma test		
Results		
IgM	ROP1c, GRA8	positive
IgG	GRA7	positive
	GRA8	positive
	p30	positive
	GRA1	positive
IgG avidity	low to p30	
	low to GRA1	
Result interpretation		
<b>Phase I</b>		
<i>(0-3 months since infection)</i>		
→ <i>Risk of prenatal infection</i>		