

SERION ELISA *classic*

CSF diagnostics

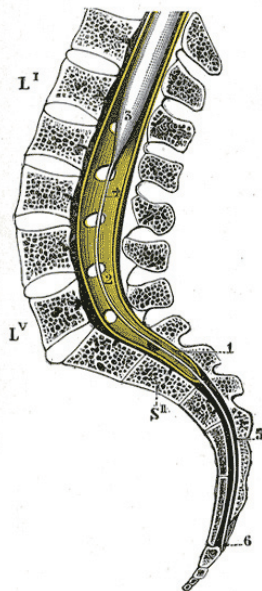
Certain SERION ELISA *classic* have been evaluated for the determination of intrathecal antibodies and are recommended for the detection, as well as for the differentiation, of inflammatory processes within the central nervous system (CNS). A software tool supports the calculation of antibody indices according to a scheme of Prof. Hansotto Reiber (Reiber and Peter, 2001).

Diagnostic Relevance

Determination and differentiation of inflammatory processes within the central nervous system (CNS) are the major objectives in CSF diagnostics. For accurate diagnosis it is important to determine whether the disease state is caused by infection or due to a chronic inflammatory process (e.g. Multiple Sclerosis).

Existing neurologic symptoms and the suspicion of infection of the CNS or a chronic inflammatory process make a diagnosis using cerebrospinal fluid based on the determination of intrathecal synthesized antibodies necessary. In the case of an acute infection of the CNS local antibodies are produced against the responsible pathogen. Since direct detection of the pathogen in the CSF is often not possible (e.g. in case of a *Borrelia* infection) or too time consuming, serological methods are primarily used for the differential diagnosis of an infection within the CNS. Chronic inflammatory processes of the CNS may result in the activation of a polyspecific immune response. In such cases specific antibodies against different viral pathogens may be detected although the related pathogens are not responsible for the disease. Analysis of the CSF alone is not sufficient for determination of intrathecal synthesized antibodies. Additional factors have to be taken into account.

The passage of large molecules and cells from the arterial blood across the blood/brain barrier and into the CSF is very limited due to the permeability properties of the vascular



Location of spinal chord within the spinal column

serion



multianalyt™

walls Amino acids, sugars and proteins, as a consequence of their particular molecular characteristics, have varying requirements for transfer across the barrier; however the permeability for proteins is primarily a function of their size. As a consequence, under normal conditions, the total protein concentration in the cerebrospinal fluid is approximately 1 % of that in the corresponding serum. If the blood/brain barrier is compromised, the levels of proteins in the CSF may be substantially elevated above the norm.

Antibodies found in the CSF may have their origin in the plasma, entering the CSF by diffusion, or be synthesized within the CSF itself. The determination of an intrathecal antibody synthesis is possible only by the simultaneous quantification of a range of proteins in the CSF as well as in the corresponding serum. Therefore, CSF / serum quotients and antibody indices (AI) are determined in accordance with a calculation scheme developed by Hansotto Reiber. This is done for quantitative SERION ELISA *classic* Borrelia burgdorferi IgG and IgM, SERION ELISA *classic* Cytomegalovirus IgG, SERION ELISA *classic* TBE Virus IgG and IgM, SERION ELISA *classic* Herpes Simplex Virus 1/2 IgG, SERION ELISA *classic* Measles Virus IgG, SERION ELISA *classic* Mumps / Parotitis Virus IgG, SERION ELISA *classic* Rubella Virus IgG und SERION ELISA *classic* Varicella-Zoster Virus IgG or, alternatively,

by using the SERION Multianalyt™ CSF IgG in order to detect IgG antibodies directed against Measles Virus, Rubella Virus, Varicella-Zoster Virus and the Herpes Simplex Viruses 1 and 2 simultaneously. An evaluation software facilitates the calculation of antibody indices (AI) according to Reiber (see Reiber and Peter, 2001).

Validation of SERION ELISA *classic* for CSF diagnostics

The SERION ELISA *classic* and the SERION Multianalyt™ CSF IgG were evaluated for CSF diagnostics in comprehensive studies. As an example, the intra- and interserial precisions of calculated antibody indices in a selection of SERION ELISA *classic* tests are presented in the following table. The antibody indices were determined by the analysis of serum/CSF samples of different reactivities.

SERION ELISA <i>classic</i>	Antibody index (AI) Intraassay CV (%) (n=10)	Antibody index (AI) Interassay CV (%) (n=10)
Measles Virus IgG	10,0	14,8
Rubella Virus IgG	8,0	7,0
VZV IgG	8,8	6,3
HSV 1/2 IgG	7,8	7,8

Order Information

The following SERION ELISA *classic* are evaluated for the analysis of cerebrospinal fluid.

SERION ELISA <i>classic</i> Borrelia burgdorferi IgG	Order Nr.: ESR 121 G
SERION ELISA <i>classic</i> Borrelia burgdorferi IgM	Order Nr.: ESR 121 M
SERION ELISA <i>classic</i> Cytomegalovirus IgG	Order Nr.: ESR 109 G
SERION ELISA <i>classic</i> TBE Virus IgG	Order Nr.: ESR 112 G
SERION ELISA <i>classic</i> TBE Virus IgM	Order Nr.: ESR 112 M
SERION ELISA <i>classic</i> Herpes Simplex Virus 1/2 IgG	Order Nr.: ESR 105 G
SERION ELISA <i>classic</i> Measles Virus IgG	Order Nr.: ESR 102 G
SERION ELISA <i>classic</i> Mumps / Parotitis Virus IgG	Order Nr.: ESR 103 G
SERION ELISA <i>classic</i> Rubella Virus IgG	Order Nr.: ESR 129 G
SERION ELISA <i>classic</i> Varicella-Zoster Virus IgG	Order Nr.: ESR 104 G
or alternatively:	
SERION Multianalyt™ CSF IgG	Order Nr.: MK 2360 G

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