Anti-Parvovirus B19 EUROLINE (IgG)

- **Line blot based on highly specific recombinant antigens**
- **Simultaneous detection of the antibodies relevant in different stages of parvovirus B19 infection**
- **Fully automated incubation and evaluation of the immunoblot strips with EUROBlotOne / EUROLineScan**

Technical data

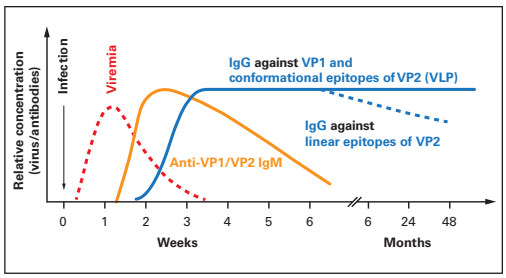
Antigens	Highly specific recombinant antigens purified by affinity chromatography: viral protein/VP1 and VP2 (predominantly with linear epitopes), virus-like particle/VLP (with conformational epitopes) and nonstructural protein 1/NS1
Sample dilution	Serum or plasma; 1:51 in universal buffer
Test procedure	30 min / 30 min / 10 min, room temperature; fully automatable
Test kit format	16 membrane strips; kit includes all necessary reagents
Automation	Compatible with all commercial blot processing systems, e. g. EUROBlotOne or EUROBlotMaster from EUROIMMUN
Order no.	**DN 2580-1601 G**

Clinical significance

Parvovirus B19 infections occur mainly in spring and predominantly in child day care centres, schools and hospitals. The virus is transmitted by droplets, skin contact, via blood or diaplacentally. The incubation period is 4 to 14 days. The virus can be detected in the serum between the 3rd and 16th day after infection. When the exanthema appears the patient is no longer infectious. In children parvovirus B19 causes fifth disease. The exanthema generally starts with an intense reddening and swelling on the cheeks and progresses to the arms, buttocks and legs. The exanthema is characteristically garland-shaped or net-like. It lasts for 6 to 21 days and subsides with an undulating form. Clinically, fifth disease is difficult to distinguish from rubella, and serology is often used for clarification. An acute parvovirus B19 infection can also proceed with purpura Schoenlein-Henoch, pseudoappendicitis, coxitis, enteritis, myocarditis, neuropathy of the brachial plexus, and erythema nodosum. In adults the disease can cause acral exanthema and arthritis. 17 % to 33 % of all heart muscle inflammation cases can be attributed to parvovirus B19. The condition "pure red cell aplasia" described in AIDS patients is caused by chronic parvovirus B19 infection. Diaplacental parvovirus B19 infections during pregnancy can lead, via inhibition of foetal erythropoiesis, to anaemia, hypoxia and in extreme cases to hydrops fetalis and even foetal death.

Diagnostic application

Serology delivers important information about the status of an infection with parvovirus B19. If an acute infection is present, antibodies of class IgM against VP1 and VP2 antigens (viral structural protein) are detectable towards the end of the viraemic phase, followed by seroconversion with antibodies of class IgG against the same antigen structures. After recovery, IgM antibodies are generally no longer detectable, while the IgG immune response varies. Typically, the IgG titer against linear epitopes of VP2 drops. The titers against conformational epitopes (virus-like particle/VLP) and against VP1 remain. In a persistent infection the complete elimination of the virus is delayed. Serologically, the detection of antibodies of class IgG against NS1 (nonstructural protein) can indicate a persistent infection. The Anti-Parvovirus B19 EUROLINE allows determination of the relevant antibodies at different stages of an infection. Linear (VP1 and VP2) and conformational (VLP) epitopes of the viral capsid structural proteins and the NS1 antigen are applied at defined positions on membrane chips.



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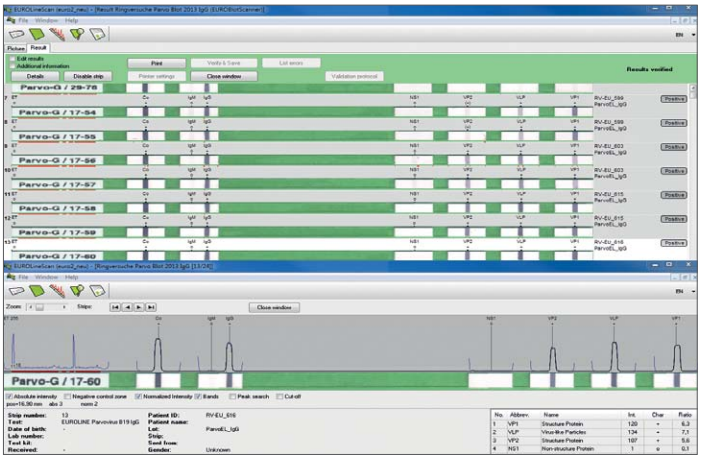
Test principle

The EUROLINE is a qualitative in vitro immunoassay, in which membrane strips printed with lines of purified, biochemically characterised antigens are used as solid phase. Each antigen is coated onto a separate membrane fragment, enabling the production process and thereby the efficiency of antibody detection to be optimised for each protein. Since antigen bands are located at defined positions, results can be evaluated visually without the need for additional equipment. Correct performance of all test steps is confirmed by staining of the control band.

Automated processing

The compact, fully automatic EUROBlotOne is an instrument for the standardised processing of EUROIMMUN line assays (EUROLINE, EUROLINE-WB, Westernblot) – from sample recognition to the final test result. Samples are pipetted by the device and all incubation and washing steps are carried out automatically. Finally the data of the pictures taken by the integrated camera are automatically evaluated and digitally archived by the EUROLineScan software. Alternatively, the immunoblot strips can be incubated by the EUROBlotMaster and scanned using the EUROBlotScanner or photographed directly in the incubation tray using the EUROBlotCamera. Also in this case, the automatic evaluation is carried out by the EUROLineScan software. The bidirectional communication with a laboratory information system for import of work lists and export of results is enabled by EUROLineScan or, optionally, the laboratory management software EUROLabOffice.



Sensitivity and specificity

Investigation of 65 serologically and/or clinically characterised patient samples[1,2,3] using the EUROIMMUN Anti-Parvovirus B19 EUROLINE (IgG) yielded a sensitivity of 98 % and a specificity of 100 %.

[1] INSTAND e.V.: Society for Promotion of Quality Assurance in the Medical Laboratories, Duesseldorf, Germany; [2] Labquality, Helsinki, Finland; [3] Reference Institute for Bioanalytics (RfB), Bonn, Germany.

n = 65		Target result from QA institutes		
		positive	borderline	negative
EUROIMMUN Anti-Parvovirus B19 EUROLINE (IgG)	positive	50	0	0
	borderline	0	0	0
	negative	1	0	14

Clinical data

Characterisation of sera (Consiliary Laboratory for Parvovirus, Regensburg, Germany)	n	Positive/borderline results obtained with the EUROIMMUN Anti-Parvovirus B19 EUROLINE (IgG)
5 - 10 days after parvovirus B19 contact (viraemic phase)	42	17 (40 %)
Acute parvovirus B19 infection	5	5 (100 %)
Past parvovirus B19 infection	30	28 (93 %)
Possible indication of virus persistence (anti-NS1 IgG positive)	5	5 (100 %)
No acute or past parvovirus B19 infection	38	1 (3 %)
Patients with acute CMV or EBV infection	42	28 (67 %)*
Pregnant women	50	40 (80 %)*

*These sera could be confirmed as anti-parvovirus B19 IgG positive with a CE-registered test from another manufacturer.

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