



Anti-Rubella Virus Westernblot (IgG)



- Based on whole antigen extract of rubella virus strain HPV-77
- Differentiation between fresh and past infection by means of the E2 protein
- Fully automated incubation and evaluation of immunoblot strips using EUROBlotOne/EUROLineScan

Technical data

| | |
|------------------------|---|
| Antigen | The antigen used in this test is an electrophoretically separated whole antigen extract of rubella virus (strain "HPV-77") from infected vero cells |
| Sample dilution | Serum or plasma; 1: 51 in universal buffer |
| Reagents | Ready for use with the exception of the universal buffer and the enzyme conjugate (10x) |
| Test procedure | 30 min / 30 min / 10 min, room temperature |
| Kit format | 24 membrane strips; test kit includes all required reagents |
| Order number | DY 2590-2401 G (IgG, 24 strips) |

Clinical significance

Rubella infection is transmitted by aerosols and is already contagious during the two to three weeks' incubation period. Typical symptoms are headache, lymph node swellings, particularly in the neck area, and a blotchy exanthema, which generally persists for 3 days. A known complication is arthritis in the finger, hand, elbow and ankle joints, which may last for up to three weeks in adults, especially in women. The majority of infections occur between the ages of 5 to 14 years and lead to life-long immunity. A prevalence of 80 to 90% is assumed for adults in central Europe. This means that 10 to 20% of women of child-bearing age are not immune.

Rubella virus transmitted diaplacentally during the first trimester of pregnancy causes the highest rate of embryonic deformities. Severe forms of rubella embryopathy are found in around 80% of cases. In the foreground are Gregg's Triad consisting of heart deformations, eye defects and hearing damage, such as congenital vitium cordis in around 48%, retinopathy in around 39%, cataract/myopia in around 29%, glaucoma in around 3% and deafness in around 67% of cases. Psychomotor retardation in around 45%, neonatal purpura with hepatosplenomegaly and diabetes mellitus in around 23% and death (incl. spontaneous abortion) in around 16% of cases are also known to occur. In many countries, an acute rubella infection is considered to be a medical indication for termination of pregnancy.

In addition to the anamnesis and clinical analysis, laboratory diagnostic tests are indispensable for the detection of rubella infections, especially with respect to the serological determination of the immune status in pregnant women. Antibodies against rubella virus structural proteins, mainly of the IgG class, can be found two to three days after the onset of the exanthema. Antibodies against the complete, intact rubella virus only develop after three months to one year. Avidity determination of specific IgG antibodies contributes to the diagnosis of a fresh rubella virus infection, particularly in IgM-negative individuals with fresh infections or in patients showing persisting IgM.

Diagnostic application

IgM antibodies against rubella virus can persist for months after an infection. In order to reliably narrow down the time of infection, the determination of avidity should be supplemented by the investigation for IgG antibodies against rubella virus envelope proteins E1 and E2 using the Anti-Rubella Virus Westernblot (IgG). IgG antibodies against E1 can be found 4 to 6 days following infection, whereas IgG antibodies against E2 can be detected only 3 to 4 months after the infection took place. If a patient exhibits IgM antibodies and high-avidity IgG antibodies at the same time and the E2 Westernblot band shows a positive result, an acute infection during the previous 16 weeks of pregnancy can be ruled out with high reliability.



Test principle

For every membrane, strips from the middle and both ends are quality controlled using characterised sera. This verifies that antigen bands on all test strips of one lot are strictly parallel. In addition, a specific evaluation matrix is produced for every membrane, which ensures correct assignment of bands according to the exact electrophoretic separation.

Automated processing

EUROBlotOne is a fully automatic compact device 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, laboratory management software EUROLabOffice.



Clinical data

A serum panel of pregnant women (n = 191) was investigated using the EUROIMMUN Anti-Rubella Virus Westernblot and a CE-labelled haemagglutination inhibition test (HAI). The qualitative results of the two test systems were 99.5% in agreement.

Additionally, in 66 rubella virus-positive patient samples, the antibody responses to E2 were correlated with the relative avidity index. The presence of IgG antibodies against E2 indicates a high IgG avidity and therefore a past rubella virus infection or vaccination. A lack of IgG antibodies against E2 indicates a fresh infection or recent vaccination. However, a late infection stage cannot be ruled out because there may be a retarded, reduced or absent formation of antibodies against E2.

| n = 191 | | CE-labelled Anti-Rubella Virus HAI | | |
|--|------------|------------------------------------|------------|----------|
| | | positive | borderline | negative |
| EUROIMMUN Anti-Rubella Virus Westernblot (IgG) | positive | 177 | 3 | 1 |
| | borderline | 0 | 2 | 1 |
| | negative | 0 | 0 | 7 |

Literature

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