Clinical utility of an extended profile of serological markers for EBV infections detected by an automated immunoassay method (Maglumi 2000)

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Introduction

In recent years the evolution of monoplex and multiplex immunoassay methods in automated platforms allowed the rapid measurement/detection of different types of antibodies related to the Epstein-Barr Virus infections (mononucleosis), improving the analytical performances of the old semi-automated methods (1). The definition serological profile of EBV infections is considered the most common approach for clinical and epidemiological studies.

Aim of the study

The purpose of this study is the evaluation of diagnostic accuracy of the use of a multiple serological profile of antibodies associated to the Epstein-Barr infections (mononucleosis) and directed against the Viral Capsid Antigen (VCA), the Early Antigen (EA) and the Epstein-Barr Nuclear Antigen (EBNA): the serological profile includes VCA-IgG, VCA-IgA, VCA-IgM, EA-IgG, EA-IgA, and EBNA-IgG. Some of these antibodies present also an important role in defining the risk of malignancies EBV-associated (2,3).

Materials and methods

The VCA, EA, and EBNA antibody isotypes were determined with chemiluminescent immunoassay methods applied in an automated platform (Maglumi 2000 Plus, SNIBE, Shenzen, China); we analyzed sera of 56 patients affected by primary EBV infection (mononucleosis): 35 with acute infection, 18 with past infection, and 3 with reactivated infection, and 7 patients affected by other non-EBV infections (Toxoplasma, CMV, HIV).

Results

The results in terms of diagnostic sensitivity in EBV infection are shown in table 1-3. In patients suffering with an acute infections, the tests with higher sensitivity were VCA-IgM and VCA-IgA, in patients with past infections, VCA-IgG and VCA-IgA, and in patients with reactivated infections, VCA-IgG and EBNA-IgG, respectively. The results in terms of nosographic specificity in patients with non-EBV infections are indicated in table 4. In patients with other infections, the tests with higher specificity were EA IgG and EA-IgA.

Acute infections		
Antibody	Positive (no.)	Positive (%)
VCA-IgG	23	65.7
VCA-IgA	29	82.9
VCA-IgM	35	100
EA-IgG	24	68.6
EA-IgA	8	22.9
EBNA-IgG	4	11.4

Table 1. Diagnostic sensitivity of serological profile in patients with acute EBV infections (no. 35)

Past infections		
Antibody	Positive (no.)	Positive (%)
VCA-IgG	18	100
VCA-IgA	3	16.7
VCA-IgM	1	5.6
EA-IgG	4	22.2
EA-IgA	0	0
EBNA-IgG	17	94.4

Table 2. Diagnostic sensitivity of serological profile in patients with past EBV infections (no. 18)

Reactivated infections		
Antibody	Positive (no.)	Positive (%)
VCA-IgG	3	100
VCA-IgA	2	66.7
VCA-IgM	0	0
EA-IgG	0	0
EA-IgA	1	33
EBNA-IgG	3	100

Table 3. Diagnostic sensitivity of serological profile in patients with reactivated EBV infections (no. 3)

Antibody	Negative (no.)	Negative (%)
VCA-IgG	1	14.3
VCA-IgA	2	28.6
VCA-IgM	3	42.9
EA-IgG	6	85.6
EA-IgA	7	100
EBNA-IgG	2	28.6

Table 4. Nosographic specificity of serological profile in patients with non-EBV infections (no. 18)

Conclusions

Combining sensitivity and specificity, all tests present an important diagnostic role: the proposed serological profile of antibodies correctly diagnose EBV infections. The extended profile shows also un important role in elucidating the contribute of EBV to the development of various forms of malignancies.

References

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