

Update in Immunology

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Antibody deficiencies make up more than 50% of the primary immunodeficiencies. Of these, selective IgA deficiency (IgAD), common variable immunodeficiency (CVID) and agammaglobulinemias are the most frequent ones. Their main expression is susceptibility to pyogenic bacteria and enteroviral infection and association with autoimmunity.

The treatment of these conditions consists mainly of immunoglobuline (Ig) substitution therapy (IgA depleted in case of symptomatic IgAD) and, depending on local practice guidelines, antibiotic prophylaxis.

Because Ig substitution therapy is frequently started before final diagnose is made, one of the criteria needed for CVID diagnose, e.g. lack of response to common vaccines, is difficult to document by regular assays measuring specific antibodies levels as these may reflect exogenous sources.

One way of measuring the endogenous Ig production is ELISPOT, an *in vitro* assay looking at Ig production by isolated B cells.

A recent paper looked at the correlation of ELISPOT and flow cytometry of the lymphocytes and B-cell subpopulations after vaccination with tetanus toxoid and unconjugated pneumococcal polysaccharide (1).

Both of the tests (ELISPOT, flow cytometry) are displaying a blunt (majority of cases) or weak response of the CVID patients's B cells, e.g.:

- No production/weak production of specific Ig
- Failure of the B-cells to mature into plasmablasts (IgD⁻CD27⁺⁺CD38⁺⁺) after antigen challenge.

These results appear whether the CVID patient is on substitution therapy with Ig or not.

The practical implication in CVID patients is that plasmablasts count in peripheral blood evaluated by simple flow cytometry assay after vaccination is a good diagnostic marker for assessing antibody responses, regardless of the Ig substitution therapy.

REFERENCES

1. Chovancova Z, Vlkova M, Litzman J, et al. – Antibody forming cells and plasmablasts in peripheral blood in CVID patients after vaccination. *Vaccine* 2011; 29:4142-4150

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