IgG and subclasses

15

Mostly in serum

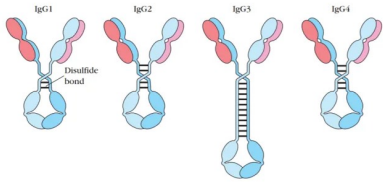
Most subclass differences in the hinge region

- eg elongated hinge with IgG3

Main Ab of the adaptive immune response

- Slower response to infection, but durable
  - more rapid in 2° immune responses (ie re-exposure)
- important defence against bacteria and viruses
  - IgG2 best for polysaccharide Ags
- Actions
  - neutralisation of toxins and viruses
  - opsonisation (ie enhancing phagocytosis)
    - Fcγ receptors are abundantly expressed on phagocytic cells
  - activates Complement
  - Directs NK cells

Crosses placenta & protects neonate



https://microbeonline.com/ezoimgfmt/i2.wp.com/microbeonline.com/wp-content/uploads/2018/09/General-Structure-of-Four-Subclasses-of-IgG.png

IgG subclasses and function

16

Properties	IgG1	IgG2	IgG3	IgG4
Approximate molecular weight (kDa)	146	146	165	146
Hinge length (number of amino acids)	15	12	62	12
Antibody-dependent cell-mediated cytotoxicity	+++	+/– –	+++	+/– –
Antibody-dependent cell-mediated phagocytosis	+	+	+	+/– –
C1q binding	+	+/–	+++	–
Complement-mediated cytotoxicity	++	+/–	++	–
FcRn binding	+	+	+/–	+
Plasma half-life	21	21	5.7.5	21
Approximate average plasma concentration (g/L)	9	3	1	0.5

Common Variable Immunodeficiency (CVID)

44

Most common primary immunodeficiency in adults requiring treatment

- Incidence 1 in 10,000 - 1 in 100,000
- M:F 1:1

Heterogeneous group of disorders

10% familial

- Often associated with IgA deficiency
- Most will not have a family history of immunodeficiency

Occurs at any age

Clinical criteria: one of

- increased susceptibility to infection
- autoimmunity
- granulomatous disease
- unexplained polyclonal lymphoproliferation
- affected family member with antibody deficiency

CVID–Investigation

49

Laboratory criteria

- Marked decrease of IgG ± low IgA ± low IgM levels
  - measured on two occasions, at least one hour apart
  - at least one sample taken when infection-free
  - (low IgA = *probable* CVID, normal IgA = *possible* CVID)
- AND one of
  - poor antibody response to vaccination
  - IgG < 2 g/L and a delay to providing Ig replacement would present significant risk
  - low switched memory B cells (<70% of age-related normal value)
  - absent isohaemagglutinins
- AND
  - diagnosis is established after the 4th year of life
    - but symptoms may be present before

Exclusion of 2° causes of low Igs

- Drugs
  - Carbamazepine, sulfasalazine, etc can mimic CVID
  - Captopril, gold, valproate, pencillamine, NSAIDs can cause low IgA
- Myeloma, lymphoma
  - Check EPG/IEPG/SFLC
- Nephrotic syndrome
- GI protein loss