Practical immunity

COMPLEMINT – FIXATION REACTION

Complement fixation : is an immunological test that can used to detect the presence specific **Ab** (or specific Ag) in patients serum , (CFT) can be used to detect very small amount of antibody's . It was widely used to diagnosis infections , particularly with microbes that are not easily detected by culture method .

Complement-fixation can be used in diagnosis of syphilis(Treponema pallidum) (Wassermann test) and still used to diagnosis certain viral , fungal disease

- The test performed in two stages : (**complement fixation** & **indicator**)

The basic steps of a complement fixation test are as follows :

1- serum isolated from the patient. (serum with Abs against antigen)

2- patient naturally have different levels of complement proteins in there serum .

To negate any effects this have on the test , the complement protein in the patient must be destroyed & replaced by a known amount of standardized complement proteins .

1- the serum is heated in such away that all of the complement proteins – but none of the Abs - within it are destroyed.

2- A known amount of standard complement proteins are added to the serum (these proteins are frequently obtained from guinea pig serum)

Antigen of interest is added to the serum

3-Sheep red blood cell which have been pre-bound to anti-sRBC antibodies are added to the serum .

The test is considered negative if (the solution turns pink at this point & Positive (otherwise)

If the patient's serum contains antibodies against the antigen of interest they will bind to the antigen in step (2) to form antigen - antibody complexes

The complement proteins will react with these complexes and be depleted , Thus when the sRBC-antibody complexes are added in step (3) there will be no complement left in the serum

However, if no antibodies against the antigen of interest are present , the complement will not be depleted and it will react with the sRBC-antibody complexes added in step (3) , lysing the sRBCs and spilling their contents in to the solution , thereby turning the solution pink.