R.A. LATEX TEST IN INFECTIOUS MONONUCLEOSIS

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POSITIVE R.A. latex fixation is known to occur in a number of non-rheumatoid states (*British Medical Journal* 1964). These include sarcoidosis (Kunkel et al 1958) syphilis, (Peltier and Christian 1959), tuberculosis (Singer et al 1961), virus infections (Dresner & Trombly 1959) and liver disease (Atwater & Jacox 1963, Bouchier et al 1964). It has also been reported positive in a small number of cases of infectious mononucleosis (Dresner & Trombly 1959, Caplan 1963). The following report compares the R.A. latex test and serum glutamic pyruvic transaminase (S.G.P.T.) levels in patients with infectious mononucleosis.

Methods

The diagnosis of infectious mononucleosis was confirmed in 10 patients, age range 18 to 24 years, by examination of peripheral blood films and estimation of heterophile antibody titre (Paul Bunnell test). The Paul Bunnell test was conducted on guinea-pig-kidney absorbed serum. A titre of 1 in 40 or over was regarded as positive.

Serum glutamic pyruvic transaminase (S.G.P.T.) was determined by the method of Reitman and Frankel (1957). Values over 45 units per ml were considered significant.

R.A. test (Baxter Laboratories Ltd) was performed using 1 in 20 dilution of the patients serum. Reactions were recorded as negative, weakly positive and positive.

Results

The results (see Table) show a relationship between R.A. latex positivity and significant levels of S.G.P.T. Raised levels of S.G.P.T. in all but four instances were associated with positive or weakly positive R.A. latex tests. However a specific level of S.G.P.T. activity could not be found at which the R.A. latex test became positive.

In two of the cases (Nos. 2 and 6) there was only a mild initial elvation of S.G.P.T. but a positive or weakly positive R.A. latex test persisted for over 4 weeks from the onset of the illness.

Discussion

Positive R.A. latex fixation depends on the presence in the serum of 19S macroglobulins (Franklin et al 1957). Their production in hepatocellular disease, viral infections, syphilis and macroglobulinaemia has been discussed by Dresner & Trombly (1959) who conclude that although they share some common physical properties such as molecular size and the ability to agglutinate treated latex particles, pathological macroglobulins are probably not identical in other respects.

The formation of macroglobulins as a direct result of the inflammatory process is suggested by the work of Williams and Kunkel (1961). They found high latex titres in untreated cases of sub-acute bacterial endocarditis, with a rapid fall in titre during successful chemotherapy. The behaviour of latex fixation tests in acute viral hepatitis also implies a relationship with an inflammatory process in the liver (Atwater and Jacox 1963). The appearance of 19S macroglobulins in infectious mononucleosis does have a relation to liver damage as shown by S.G.P.T. levels.

This theory of production does not however account for the persistence of positive latex fixation several weeks after the return to normal of the transaminase, or the fact that in many cases of acute viral hepatitis there is a negative R.A. latex test. Innes and Ferguson (1964) also failed to show, in the reticuloses, any relation between liver cell damage and the result of the latex test. They implied that a positive test may be due to an abnormality of the antibody producing cells of the body.

The suggestion that macroglobulins can be produced in response to an antigenic challenge has some support in that Abruzzo and Christian (1961) were able to produce a rheumatoid factor-like substance in rabbits repeatedly injected with killed *Escherishia coli*. In addition, Dresner and Trombly (1959) note the disappearance of latex agglutinating activity during convalescence after viral infection and suggest an antibody gamma globulin may be responsible for positive latex tests.

Abnormal globulins do occur in infectious mononucleosis, as is shown by the Hirst haemagglutinator (Hirst 1941) which like the R.A. latex factor is present in the serum and distinct from heterophile antibody. This haemagglutinator, common to infections from many pathogenic viruses, was thought to be a property of the infecting virus itself (Rubin et al 1957) but evidence now implicates the presence in the acute stage of an abnormal gamma globulin, the titre of which declines in convalescence (Havens 1958).

That antibody protein is produced in infectious mononucleosis in response to a virus is possible on the pattern of latex agglutination, being positive in the acute stage and reverting to negative in convalescence. However attempts to isolate a causative virus have been unsuccessful (Evans 1960).

The possibility of antibody globulins being produced, not in response to an infecting agent, but as part of an acute-immune mechanism deserves further consideration. Associated with infectious mononucleosis in young adults, characteristically those with strongly positive Paul Bunnell reactions are complications such as haemolytic anaemia, thrombocytopenic purpura and symmetrical bilateral polyneuritis, allergic reactions which would seem to indicate auto-immune disease (*British Medical Journal* 1961). A syndrome resembling infectious mononucleosis in known to occur after open heart surgery using large volumes of blood (Kreel et al 1960, Smith 1964), while a similar case has been described after blood transfusion without surgery (Tanaka 1964). Quoting the work of Petrakis and Politis (1962) who demonstrated the prolonged survival of viable mitotically competent mononuclear leucocytes in stored blood, Tanaka suggests the possibility of this syndrome being an example of transfusion induced host-graft disease developing in immunologically susceptible patients.

The persistence of a positive test for macroglobulins in the absence of liver disease, as shown by S.G.P.T. levels, may indicate infectious mononucleosis being at least in part an auto-immune reaction.

TABLE: R.A. LATEX/S.G.P.T. RELATIONSHIP

Case	Age	Sex	Day of Illness	Peripheral Blood Film	Paul-Bunnell Titre	S.G.P.T. Level (units/ml)	R.A. Latex Test
1	22	M	4	POSITIVE	1 in 320	—	—
			5			340	NEGATIVE
			7			260	POSITIVE
			10			320	POSITIVE
			13			280	POSITIVE
			16			135	POSITIVE
			34		NEGATIVE	24	NEGATIVE
2	18	M	2	POSITIVE	1 in 160	—	—
			5			50	POSITIVE
			7			46	POSITIVE
			9			36	POSITIVE
			13			16	POSITIVE
			33			12	WEAKLY POSITIVE
3	24	M	4	POSITIVE	—	—	—
			6		1 in 80	—	—
			11			126	WEAKLY POSITIVE
			14			124	POSITIVE
			17			128	WEAKLY POSITIVE
			21			78	NEGATIVE
			32			20	NEGATIVE
4	19	M	6	POSITIVE	—	—	—
			7		1 in 320	—	WEAKLY POSITIVE
			9			124	POSITIVE
			12			68	WEAKLY POSITIVE
			15			50	WEAKLY POSITIVE
			19			60	NEGATIVE
5	20	F	9	POSITIVE	1 in 80	18	NEGATIVE
			14			34	WEAKLY POSITIVE
			17			30	WEAKLY POSITIVE
			21			28	—
			30		1 in 80	—	NEGATIVE
6	21	F	8	POSITIVE	1 in 80	80	POSITIVE
			11			40	POSITIVE
			14			34	POSITIVE
			34			16	WEAKLY POSITIVE
7	18	M	3	POSITIVE	1 in 160	—	—
			4			—	NEGATIVE
			5			68	—
			13			360	WEAKLY POSITIVE
			19			80	WEAKLY POSITIVE
			80			10	NEGATIVE
8	19	M	7	POSITIVE	—	—	—
			8		1 in 1,280	—	—
			10			40	POSITIVE
			16			78	—
			20			46	WEAKLY POSITIVE
			34			30	NEGATIVE
9	23	M	10	POSITIVE	1 in 320	60	WEAKLY POSITIVE
			14			40	NEGATIVE
10	19	M	13	POSITIVE	1 in 80	—	—
			21			34	NEGATIVE

Summary

Comparison is made between serum glutamic pyruvic transaminase (S.G.P.T.) levels with R.A. latex test in infectious mononucleosis.

The possible mechanisms for production of 19S macroglobulins in cases of infectious mononucleosis are discussed.

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University of Bristol

DR. A. J. Buller has been appointed to the Chair of Physiology at the University of Bristol from August 1st. 1965.

Dr. Buller who was educated at the Duke of York's School, Dover and St. Thomas's Hospital was Secretary of the Military Personnel Research Committee from 1948 to 1950 during his service in the R.A.M.C.

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