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## SERUM IMMUNOGLOBULIN STUDIES IN VDRL POSITIVE PATIENT

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IMMUNOGLOBULIN disorders are associated with a variety of symptoms and diseases. The immunoglobulin possesses many antibody activity and functions as a defence against foreign particles. Immunoglobulin G contains the majority of antibacterial, antiviral and antitoxic antibodies. Additional antibodies have been demonstrated including anti-insulin<sup>1</sup>, anti-nuclear factors<sup>2</sup> and incomplete R<sub>h</sub> antibodies<sup>3</sup>. Immunoglobulin A has been shown to possess a variety of functions such as antitoxins<sup>4</sup>, anti-bacterial agglutinins<sup>4,5</sup>, isoagglutinins<sup>6</sup>, anti-insulin<sup>2</sup>, skin-sensitizing antibodies or allergic reagins<sup>7</sup> and others. Immunoglobulin M possess most 'natural' antibodies, the ABO blood group isoantibodies, cold agglutinins, rheumatoid arthritis factors, antinuclear factors<sup>2</sup>, heterophile agglutinating antibodies of infectious mononucleosis and anti-bacterial antibodies<sup>4</sup>, especially those directed against gram-negative microorganisms<sup>8</sup>.

Recent advancements in immunological studies have provided greater understanding about the functions of extremely complicated immune systems and also polyclonal and monoclonal gammopathies. The defective function of immune system results in disease. The immunoglobulin level plays an important role in maintaining homeostasis and health. Immunoglobulin disorders, if not treated or diagnosed correctly, can result in death. Thus, it becomes increasingly important to know the clinical symptoms associated with immunoglobulin disorders which will help in taking measures for prevention and proper treatment of the disease. In the present study, an attempt has been made to examine the immunoglobulin levels (G, A and M) in VDRL-positive patient and to find out any association between them.

In total 52 serum samples which showed strong VDRL-positive reaction, tested by VDRL slide flocculation test<sup>9,10</sup>, were included in the present study. The control sera were collected from 44 normal adult individuals which showed no abnormality after haematological and clinical pathological investigation. Their health status was also studied to see that none of the individuals suffered with any current infections or parasitic diseases. The serum immunoglobulin level was determined by single radial immunodiffusion technique<sup>11</sup>. The details are reported elsewhere<sup>12</sup>.

Table 1 shows the mean, standard deviation and standard error values of G, A and M immunoglobulin concentration in VDRL positive samples as well as in normal controls. The distribution of serum immunoglobulin concentration differed significantly from normality. Therefore, the skewed data on IgG, IgA and IgM are normalized by applying logarithmic transformation and the data are given in table 1. The IgG level is a little higher in VDRL positive patient as compared to normal controls, whereas, IgA level is

Table 1 Serum immunoglobulin levels in VDRL-positive patient and normal individuals

Immunoglobulins	VDRL positive patient (n = 52)			Normal individuals (control) (n = 44)		
	Mean	S.D.	S.E.	Mean	S.D.	S.E.
Raw data						
IgG (mg/100 ml)	1771.09	638.46	88.54	1539.77	567.99	85.63
IgA(mg/100 ml)	230.15	131.25	18.20	216.37	114.85	17.31
IgM(mg/100 ml)	205.82*	67.61	9.37	153.68	79.30	11.95
Log transformation						
log IgG	3.217	0.168	0.023	3.150	0.192	0.029
log IgA	2.286	0.265	0.036	2.226	0.389	0.058
log IgM	2.284*	0.168	0.023	2.128	0.229	0.034

\*P < 0.001 as compared to normal individuals.

very close to normal individuals. But the IgM level showed significantly higher value ( $P < 0.001$ ) in VDRL-positive patient.

The concentration of gamma globulin in acute and chronic infections varied from statistically insignificant to marked increase<sup>13</sup>, depending upon the type and duration of infections. Infectious diseases frequently leading to the development of polyclonal gammopathy include bronchiectasis, tuberculosis, leprosy, syphilis<sup>14</sup>, etc. The extent to which immunoglobulin level varies in different chronic infections and diseases is not known. But the association of hypogammaglobulinemia or hypergammaglobulinemia with many diseases has been reported<sup>14</sup>. In certain cases the level of immunoglobulin may indicate its association with a particular disease. In the present study it has been found that the immunoglobulin level, particularly IgM, increased markedly in VDRL-positive patient and suggests strong association between IgM level and VDRL-positive patient.

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## MULTIPLE VIVIPARITY IN A FEW TAXA OF MANGROVES

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MANGROVES possess adaptive features in their structural and physiological set-up that help them to survive where other plants cannot. Among the adaptive features to overcome the severe effects of the tidal environment, is the viviparity exhibited by a few taxa, namely *Bruguiera*, *Ceriops*, *Kandelia* and *Rhizophora* of the Rhizophoraceae confined to mangrove habitat.

In the Rhizophoraceae habitual viviparity is a common feature among the above mentioned taxa. Under normal conditions only one seedling emerges out while still attached to the fruit stock and protrude down to varied lengths.

During the recent field studies of the Kollur-Haladi riverine mangrove complex near Kundapur of the Dakshina Kannada district of the Karnataka State, we saw unusual cases of multiple viviparity in *Bruguiera gymnorrhiza* (L.) Savigny, *Kandelia candel* (L.) Druce and *Rhizophora mucronata* Poir. (figures 1-5) which warranted an anatomical study since there are very few published reports of multiple viviparity in mangroves<sup>1-5</sup>.

*B. gymnorrhiza* is scarcely distributed on the estuarine banks. Its frequency, however, is more in the muddy islands under tidal influence. Many of the trees bore fruits bearing a single cylindrical hypocotyle and also there were fruits with two hypocotyles in varied stages of development (figures 4 & 5). A striking feature of these plants is the unusual multiple viviparity, especially, in those plants which grow slightly away from the estuarine influence. This feature, though not very common after a careful search, revealed that many plants had fruits with two hypocotyles. The protruding hypocotyles from the same