

SERUM IMMUNOGLOBULIN AND FREE LIGHT CHAIN ABNORMALITIES IN NON HODGKIN LYMPHOMA

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The presence of an abnormal serum free light chain (FLC) ratio is a poor prognostic indication in all monoclonal plasma cell diseases. The availability of antibodies specific for immunoglobulin heavy chain/light chain pairs (eg IgA κ or IgA λ) has made it possible to measure similar ratios for immunoglobulins. Here we report baseline observations in a study of FLC and intact immunoglobulin ratios in patients with non Hodgkin lymphoma (NHL). Presentation sera from 93 patients (8 Waldenstrom's macroglobulinaemia-WM and 85 NHL) were analysed. Results were compared with the published normal range for FLC or data from 100 blood donor sera for the intact immunoglobulin ratios. Quantitative abnormalities were identified in the sera of 57% (53/93) of the patients with 48% (45/93) by the novel immunoglobulin assays, compared with 18% (17/93) using standard serum protein electrophoresis. The frequency of abnormalities varied markedly between diseases eg. 100% (8/8 WM), 65% (13/20 diffuse B cell lymphoma), 63% (17/27 marginal zone lymphoma) or 29% (5/17 follicular lymphoma). The most frequent abnormalities were in the serum FLC ratio (22/93) and IgD κ /IgD λ ratio (18/93). For both these ratios the abnormalities predominantly indicated an excess production of the κ form (20/22 for FLC and 18/19 for IgD) but in only one patient were the FLC and IgD simultaneously abnormal. FLC abnormalities were found mostly (14/22 patients) in combination with an abnormal ratio in one of the intact immunoglobulins. Intact immunoglobulin abnormalities were usually present (37/46 patients) in only one immunoglobulin class, as

would be expected in monoclonal disease. Abnormally low concentrations of IgM (with normal IgM κ /IgM λ ratios) were found in 28% (26/93) of the sera but this degree of immunoparesis was not seen with the other immunoglobulins or FLC. The study needs to be extended to determine whether the FLC and immunoglobulin ratios have utility for prognosis or disease monitoring in NHL.

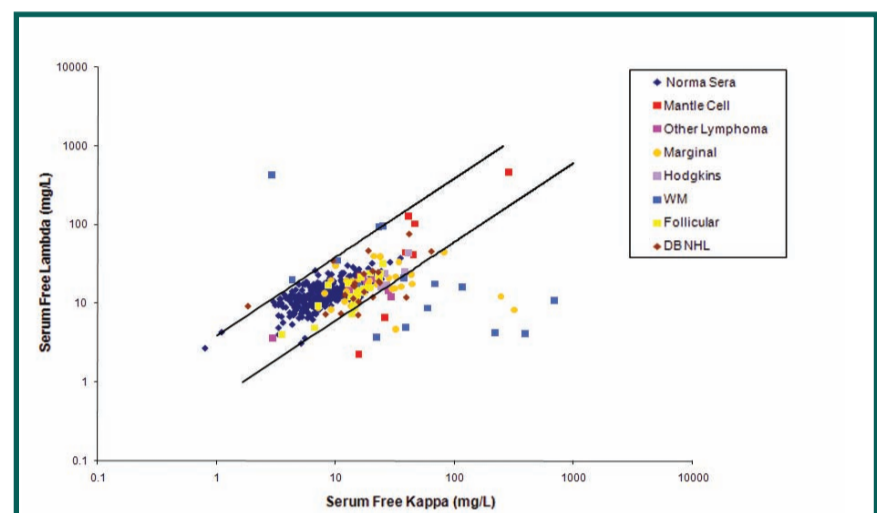


Fig1. Plot of serum free kappa versus serum free lambda light chain concentrations for patients with B-cell lymphoproliferative disorders. Results from 282 normal subjects are shown for comparison. The lines indicate the full normal range for the kappa/lambda ratio. WM = Waldenstrom's macroglobulinaemia, DBNHL = Diffuse B-cell non Hodgkin lymphoma.

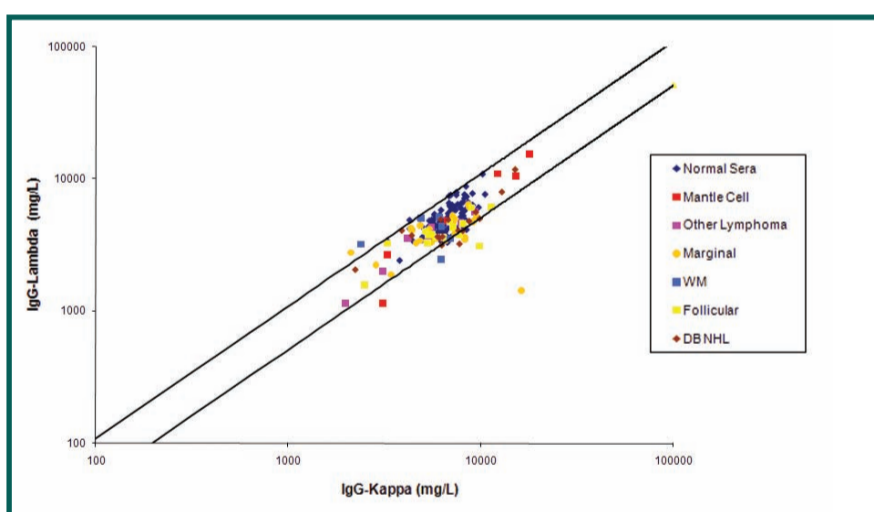


Fig2. Plot of serum IgG-kappa versus serum IgG-lambda concentrations for patients with B-cell lymphoproliferative disorders. Results from 108 normal subjects are shown for comparison. The lines indicate the 95 percentile limits for the normal range for the IgG-kappa/IgG-lambda ratio. WM = Waldenstrom's macroglobulinaemia, DBNHL = Diffuse B-cell non Hodgkin lymphoma.

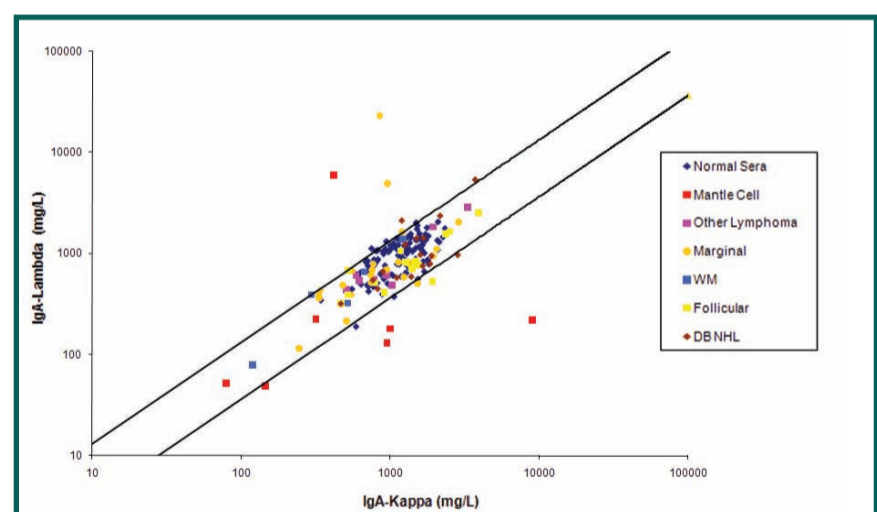


Fig3. Plot of serum IgA-kappa versus serum IgA-lambda concentrations for patients with B-cell lymphoproliferative disorders. Results from 121 normal subjects are shown for comparison. The lines indicate the 95 percentile limits for the normal range for the IgA-kappa/IgA-lambda ratio. WM = Waldenstrom's macroglobulinaemia, DBNHL = Diffuse B-cell non Hodgkin lymphoma.

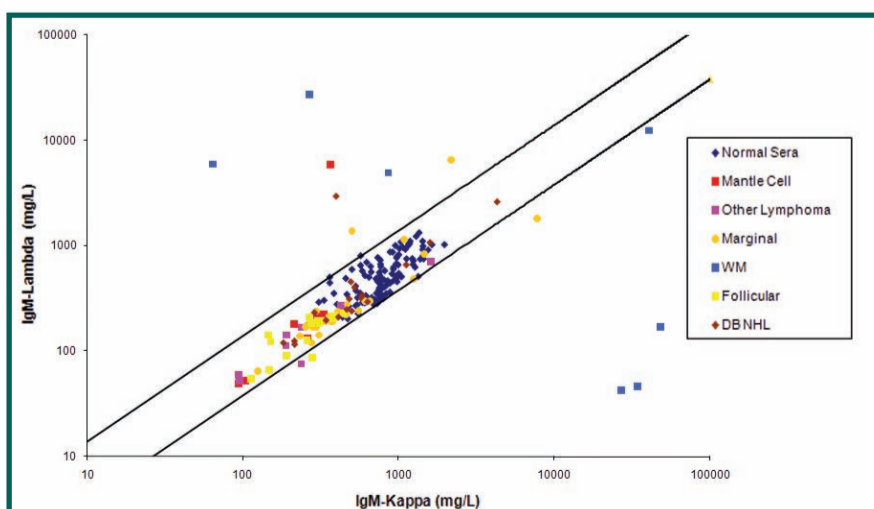


Fig4. Plot of serum IgM-kappa versus serum IgM-lambda concentrations for patients with B-cell lymphoproliferative disorders. Results from 121 normal subjects are shown for comparison. The lines indicate the 95 percentile limits for the normal range for the IgM-kappa/IgM-lambda ratio. WM = Waldenstrom's macroglobulinaemia, DBNHL = Diffuse B-cell non Hodgkin lymphoma.

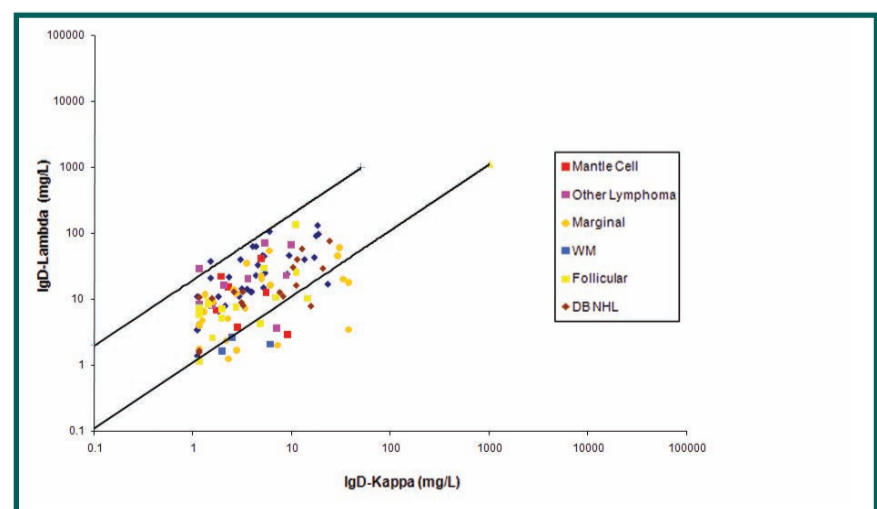


Fig5. Plot of serum IgD-kappa versus serum IgD-lambda concentrations for patients with B-cell lymphoproliferative disorders. Results from 34 normal subjects are shown for comparison. The lines indicate the 95 percentile limits for the normal range for the IgD-kappa/IgD-lambda ratio. WM = Waldenstrom's macroglobulinaemia, DBNHL = Diffuse B-cell non Hodgkin lymphoma.