he Potential role of Curcumin in Patients with Monoclonal Gammopathy of Undefined Significance- its Effect on Paraproteinemia and the urinary N-Telopeptide of type I collagen bone turnover marker

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MGUS is the most common of monoclonal gammopathies and may be associated with paraproteinemia due to plasma cell dyscrasias. MGUS can precede multiple myeloma and which in turn causes fractures as a result of lytic bone lesions, generalized bone loss, and elevated bone turnover. Previous studies have shown elevated bone resorption and/or reduced bone formation among patients with MGUS and myeloma. Curcumin (diferuloylmethane) has been shown to inhibit the proliferation of a wide variety of tumor cells, including multi myeloma cells, through the downregulation of interleukin-6. Curcumin has also been shown to inhibit osteoclastogenesis and thus reduce bone turnover.

Objective:

To determine the effect of Curcumin on plasma cells and osteoclasts in patients with MGUS.

Study Design:

A single blind, randomized, cross-over pilot study was planned with 26 patients with MGUS for 6 months. Patients were randomized into group A and B on a randomization 2:1. Group A patients (17) were given Curcumin in the beginning of the study and were then crossed over to placebo at the end of 3 months, whereas group B patients were given placebo first and then crossed over to Curcumin. Curcumin was administered orally at a daily dose of 4 g/day.

Blood and urine samples were collected at the baseline and specific visits. Full blood count, B2 microglobulin, serum paraprotein and immunoglobulin electrophoresis (IEPG and EPG) were determined. Serum calcium, 25 hydroxyvitamin D3, and bone specific alkaline phosphatase (bsALP) were determined at baseline only.

Results:

- In Curcumin treated group, decrease in serum paraprotein level (12 to 30 %) was seen in selected patients [50% of those who had baseline serum paraprotein level ≥20 g/l]. For the patients having serum paraprotein level < 20g/l the serum paraprotein level remained stable throughout the study period. In case of patients receiving placebo, stable or increase in their serum paraprotein level was observed
- 27% of patients on Curcumin showed decrease of >25% in urinary N-telopeptide of type I collagen. These results indicate that certain patients may show a decrease in bone resorption in response to Curcumin.

Conclusion:

This study shows that Curcumin decreases paraprotein load and bone resorption in some patients with MGUS. Curcumin thus may provide an innovative tool to delay or prevent the progression of MGUS to multiple myeloma.