1. **Intermittent Fasting for ovarian cancer reduction**

**Global Integrative Oncology: Use in Cancer Treatment & Patient Management**

**Background**: Calorie Restriction (CR) is an established tumor preventative approach known since antiquity. CR reduces systemic inflammation; growth factor signaling and improves metabolic markers in the tumor.

**Aim**: The aim of our study was to first; determine the effect of intermittent fasting (IF) as delivering CR on ovarian cancer outcome and enhancement of chemotherapy. Second; to determine if IF will be effective when mice are fed high fat western diet.

**Methods**:Female B6 mice were fed either ad libitum regular diet (RD) or high fat diet (HFD), injected intraperitoneally with 5 million mouse epithelial ovarian cancer ID8 cells were subjected to 16 hour fasting (IF) for 5 days/ week alone or in combination with carboplatin. Tumor growth was monitored by in situ luciferases guided imaging and pathological determination of tumors at 8 weeks. Changes in growth factors and cytokines was determined by ELISA and immune response measured by flow cytometry.

**Results**: The mice on IF displayed decreased tumor burden in contrast to mice fed ad libitum RD or HFD. The RD-IF mice show increased median survival (92 days) in contrast to mice fed ad libitum (75 days). IF and chemotherapy combination enhanced the median survival to 98 days compared to chemotherapy alone (85.5 days). HFD-IF mice exhibited increased median survival (81 days) in contrast to mice fed HFD ad libitum (69 days), which was enhanced by combination of chemotherapy (88 days). The IF mice from RD and HFD showed a significant reduction in insulin, leptin, MCP-1, VEGF and IL-6. In addition, CR mice had increased T cells and decreased macrophages.

**Conclusions**: Our study suggests that calorie restriction can suppress ovarian cancer growth irrespective of the type of diet and is associated with modulation of inflammatory and immune micro-environment, suggesting the promise of CR as supportive or preventive anticancer therapy.

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