

## **Treating cancer with heat; Hyperthermia as an emerging strategy to enhance apoptosis in cancer cells.**

Kanwal Ahmed

Assistant Professor Physiology COMJ-F Basic Medical Sciences

Heat has been used as a medicinal and healing modality throughout human history. The combination of hyperthermia (HT) with radiation and anticancer agents has been used clinically and has shown positive results to a certain extent. However, the clinical results of HT treatment alone have been only partially satisfactory. Cell death following HT treatment is a function of both temperature and treatment duration. HT induces cancer cell death through apoptosis; the degree of apoptosis and the apoptotic pathway vary in different cancer cell types. Treatment at temperatures between 40 and 44 degrees C is cytotoxic for cells in an environment with a low oxygen partial pressure and low pH, conditions that are found specifically within tumour tissue, due to insufficient blood perfusion. Under such conditions radiotherapy is less effective, and systemically applied cytotoxic agents will reach such areas in lower concentrations than in well-perfused areas. Therefore, clinically, it is preferred to use hyperthermia in combination with radiation therapy and chemotherapy.