

**COMBINED INTRAVESICAL
HYPERTHERMIA AND MITOMYCIN
CHEMOTHERAPY: A PRELIMINARY
IN VIVO STUDY**

LEA RATH-WOLFSON*‡, BOAZ
MOSKOVITZ§, YORAM DEKEL†,
VALENTINA KUGEL† AND RUMELIA
KOREN*‡

Departments of *Pathology and
†Urology, Hasharon Hospital, Rabin
Medical Centre, Petah-Tikva and the
‡Sackler School of Medicine, Tel Aviv
University, and §Urology, Faculty of
Medicine, Technion, Haifa, Israel

Summary. Previous clinical studies of the combination of local intravesical hyperthermia with cytostatic drugs for the treatment of Superficial Transitional Cell Carcinoma of the urinary bladder (STCCB) showed encouraging results both in reducing recurrence rate to 20–30% within 2 years and in ablative success rate of 79%. Our objectives were to evaluate bladder tissue and adjacent organs during and following hyperthermia treatment. An intravesical catheter equipped with a radio-frequency antenna (Synergo_ SB-TS 101.1 System) was used for hyperthermia and intravesical chemotherapy (mitomycin C) was instilled in vivo for 60 min in two anaesthetized sheep. Thirteen to fifteen thermocouples were sewn surgically on the internal and external surfaces of the bladder wall and on adjacent organs to monitor the temperature during the treatment. We expected the intravesical temperature to be under 46°C and the external layers below 45°C. The bladder was filled with 50mL of chemotherapeutic solution (400 mg/mL of mitomycin C in distilled water). The sheep were sacrificed at the end of the treatment. Three other sheep, which underwent thoracic surgery, served as control group. Histological changes in both groups showed foci of oedema and haemorrhage with inflammation in the lamina propria and serosa. Foci of desquamation of the epithelium were noticed in the treated sheep. Histological analysis of the treated group showed no significant differences from the control group. The control group showed similar changes, some less pronounced.

The combined treatment of hyperthermia with mitomycin C did not cause major damage to the urinary bladder or adjacent organs. All changes were superficial and reversible, and the control group showed similar changes, some less pronounced. Although this is an experimental model based on one single session treatment, rather than repeated treatments, it suggests that the approach may be useful in future studies both in models and man.