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# STRESS MAY INFLUENCE HOST RESPONSE FOLLOWING SURGERY. CAN WE PREDICT POSTOPERATIVE INFECTION BENEFICIAL OR HARMFUL?

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**Background:** In 1891, William B Coley injected streptococcal organisms into a patient with inoperable cancer. He thought that the infection he produced would have the side effect of shrinking the malignant tumour. To investigate this question, the following experiment was performed.

**Hypothesis:** Surgical infection may improve host response.

**Methods:** 55 urinary bladder cancer patients, with radical cystectomy and lymphadenectomy were studied. Blood samples were taken on day 0 (before) and day 1, 3, 6, 9 and 14 after operation and a five year follow up was done. TNF  $\alpha$ , soluble TNF  $\alpha$  receptor I and IL-6 levels in sera were determined by HS ELISA and/or ELISA kits. Plasma cortisol values were measured by RIA kits.

**Results:** From 55 patients, 23 infected (wound and urine infections) were found in 30 days after surgery, seven died in five years due to the metastatic tumor. All patients were bacterially contaminated, as wound samples taken at the end of operation demonstrated. Despite this fact, 21 patients remained aseptically and seven died due to the metastatic cancer. On the day 0, the circulating TNF  $\alpha$  values were lower in infected patients. TNF started to increase from day 3 till day 9 never reaching values of uneventful healing group. If no increase in TNF  $\alpha$  production 5 patients died due to the sepsis. Rest of the patients received no total cystectomy. Soluble TNF receptor I, IL-6 and cortisol concentrations did not demonstrate any difference on day 0 except cortisol what was higher in septic patient however, from day 1 started to increase transiently, reaching higher levels in septic patients.

**Conclusions:** A low pro-inflammatory response is a key facilitating factor for the development of infection. Thus measuring serum TNF  $\alpha$  level before and after operations can predict the outcome. The infection may improve host response. However, the postoperative infection is a double edge sword that can result in a severe sepsis and/or can improve immune response improving the outcome from operation and/or from tumor disease.

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