

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 tumor. 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 5 year follow up. 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:** Out of 55 patients, 23 infected (wound and urine infections) were found in 30 days after surgery, 7 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 unseptic and 7 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. There was no increase in TNF α production and five 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 levels before and after operations can predict the outcome. The infection may improve host response. However the postoperative infection is a double edge sword can result in a severe sepsis and/or can improve immune response improving the outcome from operation and/or from tumor disease.