Effect of radiation therapy on immune response of cancer larynx&pharynx

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The present study aimed to declare the effect of radiation therapy on the immune response of patients withlaryngeal and pheryngeal carcinoma in trial for rationalizinga regimen and sparing the patients any deleterious effect.In the present work, 10 patients with laryngealpharyngeal carcinoma were subjected to thorough clinicalexamination , histopathological study for tumour tissuemainly as regard to the degree of cellular reaction(lymphocyte, plasma cell infiltrate) and laboratory testsincluding :a- Blood picture •b- Quantitative and qualitative assessment of cell mediatedimmuni ty by :i Counting of the Rosette forming cells (T-cells)in the peripheral bloodii-- Dinitrochlorobenzene (DNCB) and tuberculin (P.P.D)skin tests •c- Quantitative and qualitative assessment of humoralimmunity by : i- Assessment of B - cells by immunoflourescent technique.11- Quantitative determination of serum immunoglobulinsIgG,IgA and IgM using the radial immunodiffusion medthod.Also, ten normal cases were subjected to the laboratorytests except those of skin tests •All the investigations for cancer patients were donebefore and at different dosage levels during the courseof irradiation •Patients were classified according to the irradiationresponse into: a - 1st group (7 cases) showing noimprovement • They were stopped dosafe at 4000 radb- 2nd group (3 cases) showing good response to radiation therapy • They continue to a full course oftreatment up to 7000 rad • This 2nd group of patientswere subjected for investigations at 5000 rad and afterthe full course of 7000 rad •This study demonstrated a statistically significantdecrease in the mean value of T-cell % forming Rosettefor the cases of the first group after a dose of 4000rad than that before radiation therapy In patientsshowing improvement with radiation treatment (2nd-group)the mean value of T-cell % - Rosette after a dose of 5000 rad shows a statistically significant increase thanthat before treatment. Also, with completion of a fullcancericidal dose of 1000 rad there is a statisticallysignificant decrease in the mean value of T-cell %Rosette than that after 5000 rad • As regard to thedifference between the mean value of T-cell % - Rosettebefore treatment and that after completion of the fullcourse, 7000 rad for the 2nd - group of patients, thereis no statistically significant change •Immune responsiveness for D.N.C.B. and P.P.D. skintests immediately after radiation therapy shows no changethan that before treatment • All cancer patients beforetreatment had a positive response to P.P.D. and a negativeone to D.N.C.B. In patients showing improvement withradiation treatment (2nd gp) , n9 one which had anegative reaction for DNCB converted to a

positive oneafter completion of the treatment •Peripheral blood B - cell % showed no statisticallysignificant change after radiation therapy whether forthose with had response (1st gp) after 4000 rad or thosewith good response (2nd gp) after 5000 rad or 7000 rad.Serum immunoglobulin concentration levels shows a statistically significant increase in serum immunoglobulinIgG and IgA concentration levels in cancer patients (lstgp)before than those of control group • Also, after 4000 rad,1st gp patients showed a significantly increase in IgA andIgM concentration levels than those of normal control group.Patients of the 2nd gp., showed no statistically significantdifference between their immunoglobulins IgG , 19A and 19Mconcentration levels and those of normal control personswhether before or after a full dose of 7000 rad • Although,there were no statistically significant change in serumimmunoglobulin IgG, IgA and 19M levels of cancer patientsduring the course of radiation treatment whether those withbad response (1st gp) before and after 4000 rad or thosewith good response (2nd gp) before and after 5000 rador 7000 rad, cancer patients with bad response showed adecrease in IgG level and increase in 19A and IgM levelsafter 4000 rad, than that before treatment. Patients withgood response showed a decrease in 19G and IgM levels aftera dose of 7000 rad than that levels beofe treatment •from the previous findings, it can be concluded that:1- Cancericidal doses of cobalt 60 radiation have no effectupon the immunoprotective mechanism of immunologicallycompetent cells. The improvement after irradiation of the tumours suggests that the inhibitory mechanisms uponthe immunologically competent cells also originates in thetumours destroyed by radiation therapy •2- T _ lymphocytes is the mainly cell responsible for theimmunologic anticancerous defense mechanism.3- A connection exist between eurability and lymphocytesat tissular level. Lymphocytes are in dynamic equilibriumwith circulating blood.4- T - Rosette test could be usefully incorporated into animmunologic profile used for determination of the overallimmune status of each patient with cancer and by itsserial measuring through a course of treatment ,a morerational treatment sequence may be developed •5- There is no correlation between the skin tests (D.N.C.B.and P.P.D) and the clinical course, of the disease in allthe studied groups. No correlation has been existedbetween the peripheral T-lymphocyte and responsivenessfor skin tests •6- On immunologic bases we recommended a dose of 5000 radoas a preoperative dosage in cases of combined treatment.1- We recommended further studies for evaluating the role of T-cell subsets through monoclonal antibodies(suppressor, helper, killer) as well as the role ofother cells contribute the cell mediated immunity.