QUARTERLY REPORT

TO THE

DEPARTMENT OF THE ARMY

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STUDY OF THE POST-IRRADIATION SYNDROME IN HUMANS

Report Period: December 1, 1956 - February 28, 1957

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Investigator: James J. Nickson, M.D., Head, Radiobiology Section, Division of Biophysics; Head, Experimental Radiation Section, Division of Experimental Pathology; Member, Sloan-Kettering Institute. Head, Department of Radiation Therapy, Memorial Center

Address: Sloan-Kettering Institute for Cancer Research
410 East 68th Street
New York 21, New York

PROGRESS REPORT

During the past quarter one patient, H.S. has been studied in detail and another patient has been admitted for study.

The patient, H.S., a 50-year old white female, was first operated on at Memorial Center in January 1953 for a carcinoma of the cervix. In October 1956, the patient was discovered to have round circumscribed opacities in the left and right lung fields with an effusion on the left The patient was admitted on November 16, 1956 for total body irradiation. There were no positive physical findings other than the x-ray demonstration of lung lesions. Liver chemistries and electrolytes were within normal limits. On November 30, 1956, the patient was given 150 r total body irradiation with the 1 Mev x-ray generator. Following irradiation, the patient vomitted once but there was no further nausea or vomiting. Hematological findings are summarized in the attached graphs.

There was a marked fall in the total beta lipoproteins on the third day post-radiation with increase in the clearing factor. On the 27th day, at which time the thrombocytopenia was most marked, the total beta lipoproteins had returned to control levels but an increase in the clearing factor was demonstrated. The increased clearing factor persisted after the return of the platelet count toward normal. However, the total beta lipoproteins fell. At the time of the most pronounced thrombocytopenia there were petechia around the left shoulder area which cleared within seven days. There was no other clinical evidence of bleeding.

The patient's clinical course was uneventful until the first part of January when severe dyspnea developed. X-ray films of the chest showed

massive infiltration of the entire left lung with cancer. Because of this, radiation therapy to the left chest was instituted on January 9, 1957. A mid plane dose of 1650 r was delivered to the left chest through a single anterior port in an overall time of 19 days. There was a slight improvement of the dyspnea.

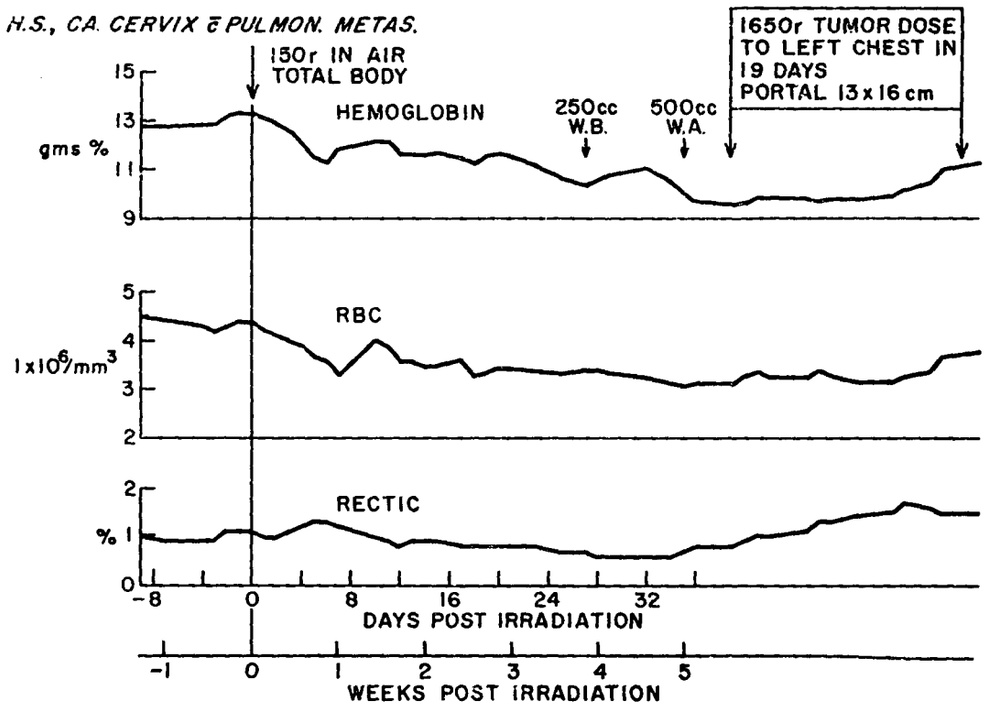
After transitory improvement of the dyspnea, the patient's respiratory problems became more severe and the patient expired on March 1, 1957.

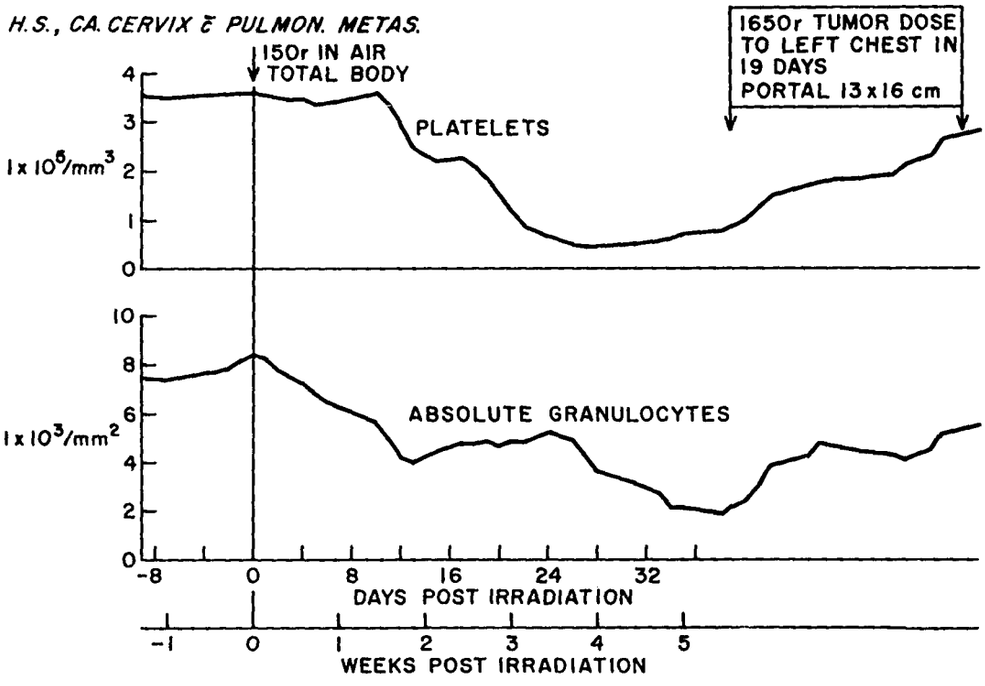
Autopsy findings showed no evidence of neoplastic disease in the pelvis or abdominal cavity. The left lung was completely replaced by tumor and many metastatic nodules were present in the right lung. Microscopic examination of the sections is not yet reported.

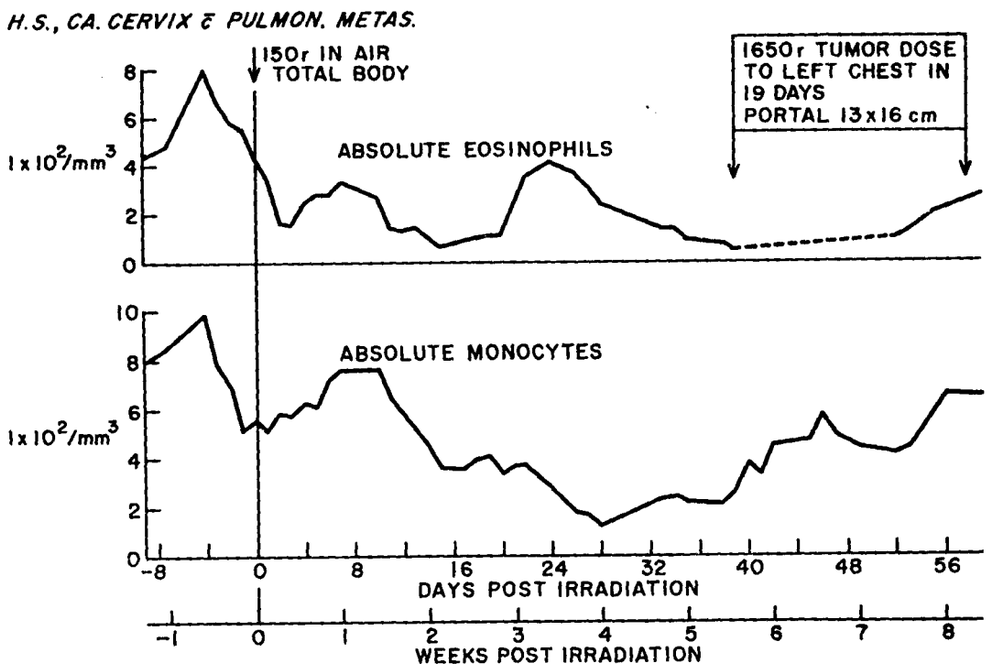
PLAN FOR THE NEXT PERIOD

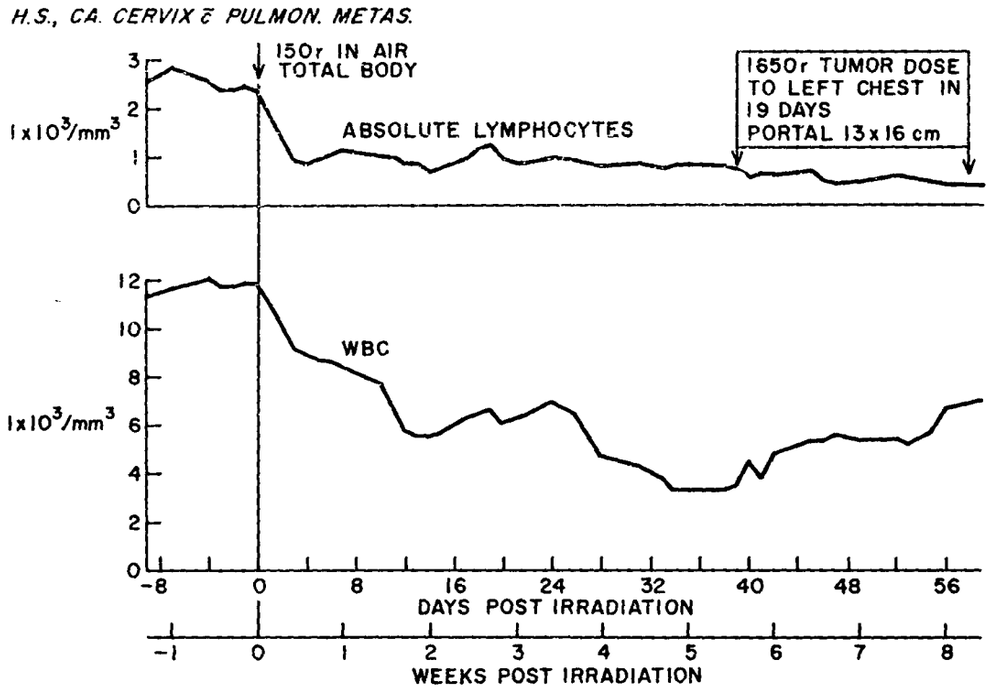
A second patient has been admitted to the Hospital at Brookhaven National Laboratory for joint study with the Medical Department at Brookhaven. Base line studies are currently being made. Alterations in sodium spaces and extracellular fluid following total body irradiation will be measured in addition to extremely detailed hematological work. It is planned to give the patient 75 r total body irradiation by means of intravenous injection of sodium-24.

In conjunction with the Department of Physics, work is progressing on the construction of a total body phantom which will include a skeletal frame. This phantom will be used to determine accurate mid-plane dose and integral dose in total body exposure.









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