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OFFICE OF THE VICE PRESIDENT
FOR
THE MEDICAL CENTER

April 11, 1972

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BOX No. 3 of 6
FOLDER Misadministration of 32P Detroit Osteopathic Hosp 5/72

Mr. Boyce Grier
U. S. Atomic Energy Commission
Division of Compliance
Region III
799 Roosevelt Road
Glen Ellyn, Illinois

RE: Riverside Hospital
Trenton, Michigan

Dear Mr. Grier:

On April 3 and 4, 1972, Mr. James Allen, Mr. Gerald Phillipp and I examined the records and interviewed the physicians and other personnel involved in the case of . The following is an account of the medical aspects and my impressions of the significant elements of this case.

Reported Normal Hemogram No platelet count.

This 68-year-old white female was admitted to the Riverside Osteopathic Hospital on December 29, 1971 for evaluation of a large abdominal mass. On January 3, 1972, the patient was explored by her surgeon who found a very large ovarian cyst. This was removed with some spillage of the contents of the cyst. At the time of the exploration the surgeon stated there was no gross evidence of intraabdominal metastasis including the omentum and the liver. The pathological diagnosis of the cyst was mucinous cystadenocarcinoma of the left ovary.

Once the malignant diagnosis had been established, the surgeon conferred with the Chief of the Nuclear Medicine Department of the Detroit Osteopathic

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Hospital Corporation and with the Oncology Department. The decision was made to administer 30 ~~cMi~~ mCi of radioactive chromic phosphate ($_{32}P$) intraperitoneally. Proper!

The surgeon was told by the Chief of the Nuclear Medicine Department that the physician in charge of the Nuclear Medicine Program at Riverside Hospital could administer this dose at the Riverside Hospital. The physician at the Riverside Hospital gave an oral order to the nuclear medicine technician to order this material by telephone from the Mallinckrodt Chemical Works in St. Louis. On January 12, 1972, the physician with the assistance of a radiology resident instilled into the peritoneal cavity what he thought to be 30 ~~cMi~~ mCi of radioactive chromic phosphate. The patient was then discharged on January 14, 1972. Approximately two weeks later the patient returned to the surgeon in his office complaining of general fatigue and malaise which the surgeon interpreted as a reaction from the surgery and probably from the therapy. no reported Blood Count. On February 10, 1972, the patient was readmitted to the Riverside Hospital in what was described in the record as an obvious terminal condition. She expired on February 11, 1972. An autopsy was requested, but refused by the family. The cause of death was attributed to carcenoma with metastasis, pulmonary congestion and renal failure.

March 10. In early March, 1972, the Radiation Safety Officer of the Detroit Osteopathic Hospital Corporation in a review of the Riverside Hospital records noted that a dose of 30 ~~cMi~~ mCi of soluble radioactive sodium phosphate had been administered to the patient. He brought this matter to the attention of the



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Physician had 5 dy course with Dr. Sodee: Tech. recently certified

appropriate administrators and Radioisotope Committee of the hospital. Subsequently, the Division of Compliance of the United States Atomic Energy Commission was notified. Dr Norden removed from isotope Rx privileges by Hosp.

In review of the patient's record there was evidence that she had severe bone marrow damage at the time of her readmission to the hospital on February 10, 1972. Her hemoglobin had decreased to 5.8 mg, her red blood cell count was two million and her white cell blood count was 1400 with 8% granulocytes. This later finding indicated an absolute granulocyte cell count of only 112. Further review of the record indicated that the patient had cardiac and renal failure, gastro-intestinal hemorhage and rectal bleeding. The patient was also jaundice with an elevated serum bilirubin.

Since there was no evidence of metastasis at the time of surgery, it is somewhat improbable that the patient's terminal condition resulted from metastic carcenoma. The low hemoglobin can account for her cardiac failure on the basis of hypoxia. The gastro-intestinal and rectal bleeding is a terminal event in radiation bone marrow death. The elevated bilirubin is also consistent.

Assuming complete absorption of the sodium phosphate from the peritoneal cavity, I would calculate the dose to the bone compartment and hence to the marrow to be 903 rads. This is a lethal bone marrow dose.

There are several items of significance that should be noted in the case of this patient. The material received from Mallinckrodt Chemical Works was clearly labeled sodium phosphate ($_{32}P$). It was also clearly stated on the

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label the material was for intravenous administration. The specific activity of the material was ~~.095~~ .15 mCi cMi per ml which made for a volume of 31.5 ml. The solution was described by both the physician and the technician as being clear. It should be noted that normally the specific activity of chromic phosphate is of the order of 5 to 6 mCi cMi per ml reducing the volume for a 30 mCi cMi dose to 5 to 6 ml. Chromic phosphate is also a turbid blueish-gray solution.

My impression is that this mistake resulted from inexperience with radioactive chromic phosphate on the part of the physician who administered the drug and the technician who received the drug in the laboratory. Somehow or the other each failed to observe from the label that the material was soluble sodium phosphate and not chromic phosphate. The other warning signs of volume, color, and turbidity were missed.

I trust the above information will be of use to you in the disposition of this case. If I can be of further assistance, please do not hesitate to call upon me.

Sincerely yours,

George E. Thoma, M. D.
Consultant

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