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May 9, 1966

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ATOMIC ENERGY COMMISSION

INFORMATION MEETING ITEM

CURRENT STATUS OF THYROID NODULES AMONG THE MARSHALLESE

Note by the Secretary

The General Manager has requested that the attached memorandum of May 4, 1966 from the Director of Biology and Medicine, with attachments, be circulated for consideration by the Commission at the Information Meeting scheduled for Wednesday, May 11, 1966.

W. B. McCool

Secretary

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Fifty-five of the 69 were on Rongelap Island and received estimated whole body doses of 175 R plus possible doses of 700 to 1400 rem to their thyroids from the radioiodines. The remaining 14 (six were 1-10 years of age) were visiting on Ailingnae, a nearby island, and received estimated doses of 69 R whole body exposure, plus less certain but probably small thyroid doses. None of the six children who were on Ailingnae have thus far developed nodules, so that the incidence of nodules among the 19 more heavily exposed on Rongelap when 1-10 years old is 13/19 or 68 percent. Two of the three adults were on Rongelap and one was on Ailingnae.

Thus far only six of the above, including the adult found to have cancer, have been subjected to surgery. The current plans are to bring five of the remaining 10 cases to Brookhaven for further diagnostic study and possible surgery during May 1966. One is a 46-year-old adult woman and the others are girls presently 13, 13, 13 and 20 years old. They will be accompanied by the Rongelap schoolteacher who will act as interpreter. The travel and treatment of these people has been developed with the cooperation of the Honorable Wilfred Goding, High Commissioner, Trust Territory of the Pacific Islands.

All these Marshallese presumably have been taking tetraiodothyronine, a synthetic thyroid hormone, for the last seven months. The intent of the therapy is to prevent and/or cause regression of the nodules. Some success has been seen, but it is too soon to draw conclusions.

Forty children who were on Utirik at the time and received estimated doses of 14 R plus proportionately smaller internal thyroid doses were examined for nodular thyroids; none were found.

Among 194 unexposed controls who are now living on these islands, three cases of thyroid nodules were found, all in adults more than 47 years. Other forms of thyroid disease were not seen.

You will be kept informed of the progress of these studies; the next noteworthy item will be the clinical and possibly surgical findings in the five Marshallese coming to Brookhaven.

C. L. Dunham, M.D.
Director
Division of Biology and Medicine

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UNITED STATES GOVERNMENT

Memorandum

TO : R. E. Hollingsworth, General Manager
THRU : Howard C. Brown, Jr., AGMA
FROM : John A. Harris, Jr., Director
Division of Public Information

DATE: MAY 5 1966

SUBJECT: PROPOSED ANNOUNCEMENT AND RESPONSES TO INQUIRIES ON FIVE MARSHALLESE PEOPLE WHO HAVE THYROID NODULES

DPI:FT

Attached for your approval are a proposed public announcement and responses to inquiries on circumstances surrounding five new cases of thyroid nodules detected in the Marshallese people during the March, 1966, medical survey.

Two upcoming events are likely to receive news media attention:

1. the arrival, this month, of five Rongelap people in this country for clinical examination and possible surgery; and

2. the appearance of an article, in June, in the New England Journal of Medicine on the latest findings by Dr. R. A. Conard of BNL.

We recommend that the announcement be approved for issuance by Brookhaven National Laboratory just before the arrival of the five Marshallese. The questions and answers are for use to the extent necessary in response to telephone inquiry only, or for guidance before interview with media representatives.

Attachments

APPROVED:

_____ _____
General Manager Date

FIVE MARSHALL ISLANDERS TO BE EXAMINED AT
BROOKHAVEN MEDICAL CENTER

Upton, New York, May , 1966. Five people from Rongelap Atoll in the Marshall Islands of the Pacific will be brought to the Medical Research Center of AEC's Brookhaven National Laboratory at Upton, L.I., N.Y., this month for clinical examination and possible surgery. They have nodules -- a thickening or hardness -- in their thyroid glands which appear to be the result of exposure to fallout radiation from an atmospheric nuclear detonation at Bikini 12 years ago. Of the five, one is a mature woman, three are girls in their early teens, and one is a young woman under 21 years of age.

The five additional cases, noted early this year during the continuing annual medical surveys of the islanders, bring the total number of thyroid cases to 16 out of the original 82 Rongelap people who were exposed. The thyroid nodules were first detected in March, 1964, during the tenth annual medical survey of the people of Rongelap and Utirik Atolls. Thirteen of 19 children in the more heavily exposed group, all of whom had been exposed at less than ten years of age, had nodules. All nodules of those children who were examined or treated surgically were found to be benign. Only one person, a woman of 40 years, had cancer of the thyroid, for which she received surgery a year ago, and is now doing well. In addition, there were two boys with hypothyroidism in the exposed group who had previously shown growth retardation. These boys have improved as a result of the thyroid hormone therapy instituted six months ago.

Of interest among the twelfth annual medical survey observations was the absence of thyroid abnormalities in the 40 Utirik children examined who were of the same ages as the high-incidence group of exposed children on Rongelap. The Utirik children had received considerably less radiation exposure.

BACKGROUND

Following the detonation of a thermonuclear device on March 1, 1954, during atmospheric tests in the Pacific Proving Grounds, an unpredicted shift in winds caused deposition of significant amounts of fallout on four inhabited atolls east of Bikini. These were Rongelap, Ailinginae, Rongerik and Utirik Atolls. Rongelap received the largest radiation exposure. Eighty-two people of Rongelap Atoll were accidentally exposed to fallout radiation where the average whole body exposure was approximately 175 roentgens. Additional amounts of radiation resulted from absorption of radioiodine in the thyroid glands. Since that time the U.S. Atomic Energy Commission and the Trust Territory of the Pacific Islands have sponsored annual medical surveys of the exposed people. The surveys are carried out by a Brookhaven National Laboratory team, headed by Dr. Robert A. Conard from the Laboratory's Medical Research Center.

Immediately after the 1954 exposure the people were evacuated to Kwajalein Atoll for treatment and were subsequently on Majuro Atoll until 1957 when they were returned to Rongelap. On their return to their home atoll the United States provided them with a new village and other facilities and services to assist their re-establishment. The current population of Rongelap is about 228 persons. Last year Congress appropriated $950,000 as "compassionate relief" payment to the exposed population.

PROPOSED RESPONSES TO INQUIRIES

1. Q. What is new in the recent Brookhaven announcement on five Marshallese with thyroid disorders?

   A. It notes that thyroid gland nodules were diagnosed in an additional five people during the twelfth annual medical survey of the Marshall Islanders which was conducted early (February-March) this year.

2. Q. What is the total number of thyroid nodules cases detected in Marshallese to date?

   A. There have been a total of 16 cases in the 69 people now living of the original 82 people exposed. The deaths that occurred during the past twelve years were among elderly people and were not considered to be radiation-connected. Thirteen of the 19 young people, or 68 per cent, in the more heavily exposed group on Rongelap had nodules. All had been exposed at less than ten years of age.

3. Q. Are thyroid nodules malignant or benign?

   A. In all of the children examined surgically the thyroid nodules have been benign. Those not operated on yet are assumed to be benign. The possibility of an occasional malignancy cannot be ruled out, however. One of the people in the exposed group, an adult woman, has cancer of the thyroid which has been treated surgically.

4. Q. Are the nodules in the thyroid radiation-connected?

   A. We believe so. Since they have been found in the exposed population much more frequently than in the unexposed group, we must assume that the increased frequency of the nodules is radiation-connected.

5. Q. How many Marshallese have had surgery to date?

   A. Six Rongelap people with thyroid nodules have been treated surgically to date. Five were children in whom the nodules proved to be benign; one adult woman had a thyroid malignancy which was removed last year. She is doing well.

6. Q. What is being done for the additional five Marshall Islanders in whom nodules were discovered this year?

   A. Arrangements have been made to bring the five to the Medical Department at Brookhaven National Laboratory for further examination and treatment.

7. Q. When were these people exposed to radiation and how many were in the group?

   A. A total of 82 Rongelap people (64 on Rongelap Atoll, and 18 visiting on nearby Ailinginae Atoll) and 157 on Utirik who were accidentally exposed to fallout radiation from a nuclear device tested on March 1, 1954.

8. Q. Were there people on the same, or an adjacent, atoll who were less exposed? What were their radiation dose estimates?

   A. Yes. The 18 Rongelapese who were visiting on Ailinginae Atoll were lightly exposed. They received an estimated whole body dose of 69 R, and a proportionately smaller thyroid dose. About 40 children on Utirik who were mildly exposed to fallout radiation (14 R) have shown no thyroid gland abnormalities. These children on Utirik are in the same age range as those in the heavily exposed Rongelap population.

9. Q. What is the "unexposed group;" how many people?

A. Some 200 unexposed people now living on Rongelap, including 75 children, are examined as part of the annual medical surveys for comparison purposes.

10. Q. How many children were in the heavily exposed group?

A. There were twenty-five between 1 and 10 years of age at the time of the incident.

11. Q. What was the estimated dose to the thyroid glands of the children?

A. Their thyroids received doses possibly between 200 to 1400 rem largely from radioiodine.

12. Q. What kind of shape are these people in now; and what other delayed effects, besides the nodules, have been observed?

A. The general health and death rate of the exposed population on Rongelap have been about the same as for the comparison group. Other possible residual radiation effects noted in the 82 exposed Rongelapese were: slight retardation of statural growth and bone maturation in two boys exposed at less than 5 years of age; possibly a higher incidence of miscarriages in exposed women during the first four years; slower recovery of some of the peripheral blood elements, and non-malignant changes in some of the areas of previous beta radiation burns of the skin. No definite radiation effects on birth rate, aging, or leukemia have been noted. The numbers of people here are far too small for statistical analysis except in the thyroid nodule case.

13. Q. What were the circumstances surrounding radiation exposure of these people?

A. On March 1, 1954, a thermonuclear weapon of about 15 megatons total yield was detonated on a coral surface at Bikini Atoll in the Marshall Islands. Because of an unexpected shift in wind direction, the fallout pattern differed slightly from the one predicted. As a result, radioactive particles fell on Rongelap Atoll about 100 miles east of Bikini. As soon as it was learned what had happened, the Rongelap population was evacuated to Kwajalein, 300 miles away. A naval medical team flew to Kwajalein from Washington to examine and care for them.

14. Q. What was the estimated whole body dose received?

A. The average whole body dose was approximately 175 roentgens.

15. Q. What medical assistance has AEC given?

A. Since the time of the incident the U.S. Atomic Energy Commission and the Trust Territory of the Pacific Islands have sponsored annual medical surveys of the exposed people and have collaborated in seeing that their medical needs have been met.

16. Q. Who runs these surveys?

A. The surveys are headed by Dr. Robert A. Conard of the Medical Research Center at AEC's Brookhaven National Laboratory.

17. Q. What was the thyroid dose received by the exposed adults?

A. The dose to the thyroid glands of the adults from the radioiodines absorbed was estimated to be about 150 to 160 rem.

18. Q. What were the effects of the beta radiation burns?

A. There were some losses of skin pigment and occasional mild scarring of the skin as a result of the beta burns received by some of the Marshallese exposed to fallout. The dust particles adhered to exposed damp skin around the neck, head, arms, and feet during the first day of the fallout. These places received burns from beta radiation. The burns healed but the pigment, in some instances, did not regenerate.

19. Q. What is the extent of the present New England Journal of Medicine report?

A. The present report summarizes the medical findings over a twelve-year period relating to the people of Rongelap Island who were exposed. The initial findings are only briefly reviewed; more attention is given to the more recent examinations.

20. Q. Are there public reports on the medical surveys in addition to the current article in the Journal of the New England Medical Society?

A. Yes. See list below:

List of Reports of Previous Surveys

1. E. P. Cronkite, V. P. Bond and C. L. Dunham, ed., "Some Effects of Ionizing Radiation on Human Beings," AEC report TID-5358, U.S. Government Printing Office, July 1956. ($1.50).
2. E. P. Cronkite, et al, "Twelve-Month Post-Exposure Survey on Marshallese Exposed to Fallout Radiation," AEC report BNL-384 (T-71), August 1955. (OTS $0.15).
3. R. A. Conard, et al, "Medical Survey of Marshallese Two Years After Exposure to Fallout," AEC report BNL-412 (T-80), March 1956. (OTS $0.20).
4. R. A. Conard, et al, "March 1957 Medical Survey of Rongelap and Utirik People Three Years After Exposure to Radioactive Fallout," AEC report BNL-501 (T-119), June 1958. (OTS $1.00).
5. R. A. Conard, et al, "Medical Survey of Rongelap People Four Years After Exposure to Fallout," AEC report BNL-534 (T-135), May 1959. (OTS $1.25).
6. R. A. Conard, et al, "Medical Survey of Rongelap People Five and Six Years After Exposure to Fallout," AEC report BNL-609 (T-179), February 1961. (OTS $2.00).
7. R. A. Conard, et al, "Medical Survey of Rongelap People Seven Years After Exposure to Fallout," AEC report BNL-727 (T-260), May 1962. (OTS $2.00).
8. R. A. Conard, et al, "Medical Survey of Rongelap People Eight Years After Exposure to Fallout," AEC report BNL 780 (T-296), Jan.1963. (OTS $2.00).

9. R. A. Conard and A. Hicking, "Ten Year Summary of Medical Findings in Marshallese People Exposed to Fallout Radiation," AEC report BNL-8760.

10. R. A. Conard et al, "Medical Survey of the People of Rongelap Island, Eleven Years After Exposure to Fallout Radiation (March, 1965)" BNL-9698.

11. R. A. Conard and Hicking, "Medical Findings in Marshallese People Exposed to Fallout Radiation, Results from a Ten-year Study," Journal of the American Medical Association (JAMA), May 10, 1965, Vol. 192, No. 6, pp 457-459.

12. R. A. Conard, New England Journal of Medicine, June , 1966 (in press).