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Peter Rank, M.D.
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Dear Dr. Rank,

My hospital librarian was finally able to secure a copy of The Medical Basis for Radiation Accident Preparedness from Emory University. Although no doubt fascinating to a radiologist, unfortunately I found very little information to help answer my questions about epilation, diarrhea, and chronic dermatitis.

Of the nine page references listed in the index under "Epilation" and "Hair", only three offered any pertinent information:

p. 135: "About the 17th day after exposure, epilation started in the patient..."

p. 176: "Epilation is a valuable dosimeter in many radiation accidents. It occurs after doses of 300-1000 rad of beta or gamma radiation but is not as frequently observed in these kinds of injuries."

p. 302: "Epilation is a relatively late clinical effect, usually beginning on day 17 to 20; any considerable loss of hair usually means a dose of 200 rad or more. Because it occurs so late this manifestation is of little value as a clinical indicator."

There were only two references to "Diarrhea", and only this one was of any potential relevance:

p. 302: "Diarrhea is a less useful symptom [than vomiting] in indicating degree of injury and is probably more likely than vomiting to be caused by emotional responses..."

Regarding dermatitis, of the indexed pages, only four contained pertinent information (see photocopies). They indicated that for Type I injury (erythema) to occur within 15-30 minutes, perhaps several thousand rads would be necessary. And for greater injury than Type I, at least 1000 rads is required.

As you noted in your letter, it was interesting to read of cases like Mr. Y.S. (1971 Chiba, Japan exposure to Iridium 192), who suffered a combination of local and whole-body effects (9000 rad to the hip, but only 50 whole-body rads). But since none of the principals in the Cash/Landrum case managed to capture the "UFO" and place it in a hip pocket, I don't see how one can invoke such a "high local but low total-body" scenario.

If I were to extrapolate from this minimal data and apply it to the Cash/Landrum case, I would draw the following inferences:

1) Betty's reported hair loss, which apparently began only about a week after the event (far less than 17 days) may not be terribly consistent with radiation exposure.

2) Vickie's and Colby's diarrhea may have been emotionally induced.

3) Betty's "red blotches" on her "face and head", which began to appear only about 5-15 minutes after exposure (MUFON UFO Journal, Nov. '81, p. 3-4), if caused by gamma radiation, would be consistent with exposure of several thousand rads.

4) Vickie's non-healing (after 8 months) hand ulcer could result from a brief dose of at least 1000-2000 rads of gamma radiation.

Of course, the above do not begin to exhaust the possibilities, but are the only inferences I can draw from the minimal amount of specific information in this particular book.

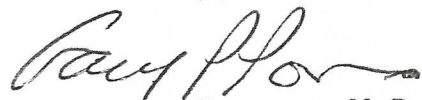
Several additional observations:

1) It is curious that although Fate (May '82) carried a very detailed account of the case, drawing heavily from Schuessler's MUFON article, no mention was even made of Vickie's non-healing sore.

2) In your letter to me of May 28, you state that my assumption of whole-body exposure in this case is a "quite simple" one. I made a reference to this on the previous page. Additionally, I have seen no indication that the principals were effectively shielded from exposure. Per Schuessler (MUFON p. 4): "Betty was directly exposed to the object 5 to 10 minutes, Vickie 3 to 5 minutes, and Colby...a minute or so". And unlike other 'combination hi-local low-whole body' cases in the book, there was no fallout involved in this case, to stick to their bodies. If this event occurred at all, it appears to have involved an intense whole-body basking.

3) James Moseley's UFO newsletter of August 10 states that there is a "complex dispute between APRO and John Schuessler's group...VISIT, in regard to the Cash/Landrum Case." I'm attempting to secure the details. Perhaps APRO smells a hoax, but this may just be idle dreaming on my part. If you wish, I will forward whatever I find out.

Sincerely,


Gary F. Posner, M.D.

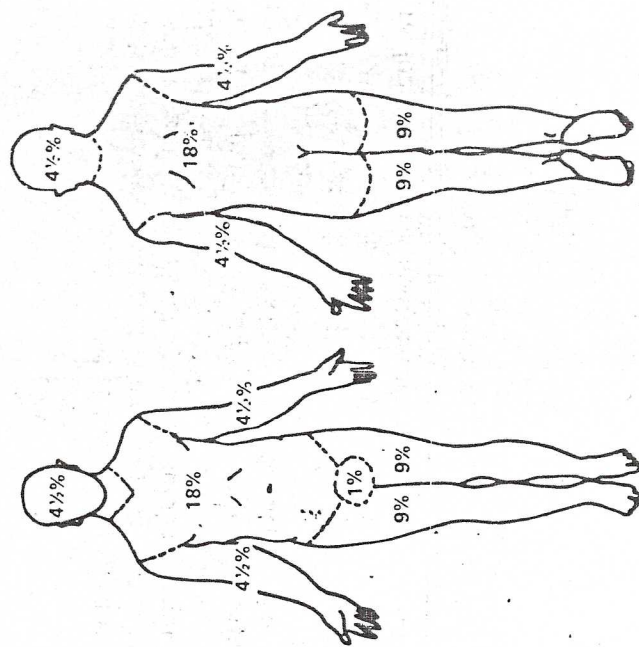
ingly exposed. A second type of error occurs when the radiographer becomes out of phase with the source by not continually using the survey meter. In this instance the source remains in the out position although the radiographer believes he has returned it to the safe position. Another type of exposure occurs when the source capsule is separated from its flexible guide wire. In this situation the source capsule is seen to be free from its guide and often the radiographer or an untrained assistant picks up the capsule and reattaches it. These scenarios account for the largest group of extremity injuries.

Other instances of severe injury result when an uneducated person finds an industrial radiation source lying free and without identification that it is radioactive. These sources are picked up, carried on one's person, and have led to severe injury and in some cases to death.^(5,6) Other instances of extremity or severe regional injury have occurred from exposure to electron beams^(7,8) and to X-ray spectrometers at 50-60 kV.^(9,10)

A simple way to estimate the extent of involvement in these circumstances of partial exposure is to utilize the "Rule of Nines"⁽¹¹⁾ that has been adopted for the determination of severity of thermal burns (Figure 1). Although this rule is heavily dependent on body surface rather than volume, its use for these kinds of injury is suggested. For example, one hand is considered to represent 1% involvement. A useful classification of skin and extremity injuries from ionizing radiation follows:⁽¹²⁾

Type I. Erythema (only), is equivalent to a first degree thermal burn like mild sunburn. Some time after exposure, a sensation of warmth or itching may occur; the redness, however, can appear as late as 2-3 weeks after exposure, and the length of the symptomless interval depends on the dose. Medical care is not necessary and ability to work is no more impaired than after a similarly severe sunburn. Dry desquamation (scaling) occurs. Brief doses of several hundred rads to skin can cause delayed erythema. In two fatal radiation accidents where skin dose was several thousand rads, erythema developed within 15 to 30 min after exposure.

Type II. Transepidermal injury (wet desquamation), is equivalent to the injury seen in a thermal burn of the second degree. After the erythema develops, blisters form and break open, leaving raw, painful wounds vulnerable to infection. Itching and pain are experienced after exposure. The symptom-free latent period is shorter than in the Type I lesions, and blisters appear within 1-2 weeks, depending on the dose. Recognizable injury of this grade requires a brief skin dose between 1000 and 2000 rad. The need for medical care and the ability to work depend on the size, location, and severity of the lesion. These lesions usually heal with proper care, but the new skin is usually pigmented, thin, and easily injured.



Posterior

Anterior

Figure 1. Rule of Nines. A rapid method of estimating the percentage of body surface involved. From Artz and Moncrief.⁽¹¹⁾

Type III. Dermal radionecrosis (radiation-induced skin death), is a more serious degree of the Type II lesion, caused by prompt doses of radiation in excess of 2000 rad. Injury of this sort has been observed in persons who handled fresh fission product material or targets in which radioactivity was induced during laboratory experiments by neutron or electron bombardment, and also after accidental exposure of hands to the direct beam of an electron accelerator. The lesions resemble those caused by a severe scalding or chemical burn. Pain occurs promptly and is intense. Medical abatement of pain is urgently needed.

Type IV. Frequently repeated or continuous exposure of the skin to X-rays, gamma rays, or beta rays over a period of months to years causes an eczema-like condition. Once it has developed, it seldom heals completely, and ulceration frequently occurs. Skin cancer occurs in a large (but unknown) proportion of such cases of chronic radiation dermatitis. In the case of persons working with X-rays during a life-time (30+ years), the effective dose levels for skin cancer production are thought to be in the region of several thousand rads when accumulated at rates of about one rad per day.

the acute symptoms of radiation burns in both hands only by bandaging and treatment with antiseptics.

Toward the end of October 1971, SH noticed the onset of hair loss from the scalp. The epilation stopped soon after, and alopecia was not observed.

On 10 October, the serum glutamic oxaloacetic transaminase (GOT) and glutamic pyruvic transaminase (GPT) activities increased up to 79 and 145 Karmen units, respectively, whereas the serum lactic dehydrogenase (LDH) activity remained normal. Symptoms of hepatitis or coronary artery disease were not evident. The GOT and GPT activities normalized without specific therapy after 6 weeks. The patient was discharged on 28 January 1972, after which time he was followed as an outpatient.

Clinical Findings in Cases YS and KJ

Patient YS, 20 years old, picked the source up and brought it back to the lodging house. He received a biologically estimated dose of 54 rad. He had experienced no prodromal symptoms. He was hospitalized 9 days after the initial exposure. Hematological data at this time revealed only a moderate leukopenia ($3500/\text{mm}^3$) with lymphopenia ($840/\text{mm}^3$). There was no anemia, and the platelet count was $290,000/\text{mm}^3$. The total WBC count decreased until day 11 and the lowest value of the WBC was $2700/\text{mm}^3$. Thereafter, the WBC increased with fluctuating waves and reached the normal value at day 25. The sternal bone marrow showed moderate hypoplasia with a relative increase of plasma cells and reticulum cells at day 9.

The bone marrow aspirate from the iliac crest showed more severe hypoplastic changes than the sternal bone marrow on day 17. Furthermore, on day 12 the bone marrow from the iliac crest remained hypoplastic whereas the marrow from the sternum showed evidence of recovery.

Severe radiation dermatitis of the right hand and the hips was noted in case YS. The burns to the hands were less severe than those of case SH and the condition was corrected in November after antiseptic treatment. The skin lesions on the buttocks were formed by contact with the radioactive source. The absorbed dose was estimated at 3000 rad on the right side and 9000 rad on the left. Pain in the buttocks had begun promptly after the initial exposure.

Wet dermatitis was found on both sides after YS was hospitalized, and necrosis of the skin was noted in the center of the lesion in the left hip. Surgical biopsy of the affected skin on the left side was carried out on 25 November, 68 days after the initial exposure. The necrotic ulcer base was underlain by fairly well developed granulation tissue in which the blood vessels had hyalinized, thickened walls. The ulcer margins, sharply

demarcated from the necrotic mass, exhibited degeneration, especially the basal layers.

The ulcerous tissue around the necrosis in the left hip was resistant to treatment, and the necrosis was surgically removed on 20 January 1972, 124 days after the initial exposure. The dermatitis had improved without surgery by March 1972. The patient was discharged on 25 March 1972 and thereafter was treated as an outpatient.

Case KJ had no nausea, vomiting, or weakness after exposure, but he noticed an erythematous lesion and pain in the right hand on 29 September. He was hospitalized on 11 October. On admission, a slight leukopenia ($3300/\text{mm}^3$) and a blister surrounded by erythema in the right hand were observed. After the radiation dermatitis had improved, he was discharged on 27 November and thereafter was treated as an outpatient. The leukocyte count increased with fluctuating waves and reached a normal value on day 56.

Clinical Findings in Cases MK, MI, and TS

The three other cases did not exhibit prodromal symptoms or radiation dermatitis. They were admitted to the hospital on 26 September. The changes in their blood were minimal, and these three patients were discharged on 16 November.

Other Laboratory Findings

Special biochemical analyses of 11 metabolites in urine and blood, which were regarded as biochemical indicators of radiation effects, were carried out over a long period.⁽⁹⁾

Four metabolites, namely, 5-hydroxyindoleacetic acid, taurine, and Dishe reaction-positive substances (DRPS) in urine and 5-hydroxytryptamine in blood, seemed to reflect the severity of the injuries to some extent. The ratio of one metabolite to another, for example, the ratios of taurine to alanine or DRPS to creatinine, was a better indicator of the injuries than the concentration of any given metabolite itself.

The gonadal effects consisted of impaired spermatogenesis in all cases and elevation of follicle-stimulating hormone concentration in the sera of YS, MK, KJ, and SH; in three of these cases, the elevation became apparent 100 to 150 days after irradiation.⁽⁹⁾

Follow-up Studies

Follow-up studies on the six men have been performed annually since 1972.

The drop in the total lymphocyte count in each case corresponded very well to the exposed doses estimated from the cytogenetic studies

Aviation Week & Space Technology

Philip J. Klass

Aug. 30, 1982

Dear Gary:

My compliments not only for your continuing research into the medical aspects of the Cash/Landrum case, but your superb, professional handling/style in dealing with Dr. Rank.


As I have so often found in cases involving radar, persons unfamiliar with the basic phenomenology involved are unable and fearful about questioning/challenging an "expert" [REDACTED] UFOlogist.

Yet clearly Rank's great desire to believe has dulled whatever expertise he has in the field of radiology.

Keep up your fine work and in time I think you will have the basis for a story for The Skeptical Inquirer.

Will send a copy to O2 per your request, but will ask him to hold confidential your work at this time.

Cordially,

A handwritten signature in black ink, appearing to be "Philip J. Klass". The signature is fluid and cursive, with a large loop at the beginning and a long horizontal stroke extending to the right.