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1. Brief statement of psychological-cognitive functioning objectives.

Psychological studies of patients recruited for study in the total and partial body radiation program were instituted during 1965-66. The broad objective of this aspect of the study was to determine the effect of these types of radiation exposure on the emotional and intellectual spheres of functioning. In these early days of space probes, interest was focused on the possible effects of radiation exposure to astronauts in outer space; in more recent years this has changed to an interest in radiation effects on man in the earth's atmosphere. The schedule of patient contacts and types of testing are given in Appendix A. The testing protocol was designed to allow one to take into account the many complex variables which may influence the measurement of cognitive and emotional functioning after radiation treatment.

2. Brief statement of nature of involvement of psychologist or psychiatrist.

Both the needs of these terminally ill patients and the design of the study facilitated the formation of a collaborative relationship between the patient and those involved in psychological evaluation. This relationship was warm, personal and supportive to the patient. Patients explored their life histories and were helped to see what the meaning of their lives had been. In return they often felt pleased that by sharing their thinking and feelings with us they were giving to and possibly helping others. When necessary, assistance was given to the patient's family members, as well

as to the patient. This help ranged over many areas: aid in securing food stamps and filling out welfare forms, referrals for transportation, crisis intervention with suicidal family members, counseling about juvenile delinquent family members, interpretation of family interaction patterns around the issue of the critically ill patient. Depending on the patient's physical status, follow-up interviews were conducted in hospitals, nursing homes, offices or the patient's private home.

3. Opinion of the quality of the informed consent on this project.

While the specific form of the informed consent has varied through the years, the quality and the appropriate nature of the consent have been consistent. Patients have generally exhibited a remarkable degree of understanding both about the procedures to be followed and of the experimental nature of the uses of whole and partial body radiation for those with advanced neoplastic disease.

4. Quality of patient care.

Patient care on this project, both inpatient and outpatient, has involved a coordinated team approach. The ease of communication between team members has allowed for rapid and effective noting of patient needs, their referral to the proper team member, and an early attempt to meet the needs. Thus, the psychologist after a session with the patient might report to the doctor with medical responsibility on a suspected physical problem and the doctor very frequently alerted the psychologist to what he thought might be important emotional states in the patient. As a

result, patients frequently expressed pleasure about their care. The physical aspects of patient care were greatly improved when Cincinnati General Hospital opened the new hospital building for inpatient care.

5. Is the care palliative? How did the patients feel?

There are a number of evidences that patients felt that the supportive care of the psychologist or psychiatrist was beneficial in alleviating distress. One such evidence is the fact that no patient dropped from the six-weeks post-radiation study period and many continued informal contact after the official study period was terminated. Another instance of this is the view of ward nurses who sometimes commented that they wished other patients on their wards could have the same type of help. Many patients, perhaps most, at one time or another commented on the importance to them and their daily functioning of the relationship with the psychologist or psychiatrist. In addition, family members often voiced gratitude for the support and care which had been given to the patients.

6. What were the positive findings, if any, from the studies of cognitive and emotional studies?

Briefly, the findings regarding cognitive and emotional functioning of these patients (N = 36) are as follows:

(1) There is evidence of a rise in cognitive malfunctioning immediately after radiation for all three types of radiation groups (i. e., total body radiation < 150 rads, total body radiation \geq 150 rads, partial body radiation).

This increase indysfunction is especially significant for those who receive total body radiation. This effect is transient and decreases markedly by day 3, although a slight peaking is found on day 14 post-radiation.

2. As might be expected of any measure of intellectual functioning, those with higher levels of basic intelligence respond with less dysfunction than do those with basic intellectual deficits.

(3) This finding with regard to cognitive impairment must be interpreted within the context of other variables which are specific to this particular patient group:

- (a) High anxiety levels.
- (b) Evidence of moderate depression throughout the period of the study.
- (c) The confounding effect of impending death for some patients.

APPENDIX A

Procedures Used in Evaluation

Since the procedures for psychological evaluation of the subject have been changed somewhat through the years, a brief outline of those research methods currently being used is given below.

1. After a patient is selected for partial or total body radiation and has agreed to cooperate in the study, arrangements are made with the patient for a series of initial interviews. During this series a detailed but relatively unstructured interview is conducted. The following measures are also obtained:

- (a) Reitan Trails Test, parts A and B.
- (b) Cattell's 16 Personality Factor Test, Form A
- (c) Wechsler Depression Rating Scale
 - A. Attitudes and Feelings
 - B. Physiological Functioning
 - C. Observations of the Interviewer
- (d) Selected portions of the Wechsler Adult Intelligence Scale:
 - A. Verbal:
 - Information
 - Comprehension
 - Similarities
 - Arithmetic
 - Digit Span
 - B. Performance:
 - Picture Completion
 - Digit Symbol
- (e) A memory scale similar to that developed by Wechsler.
- (f) A five-minute verbal sample which is transcribed and content-analyzed for the following Gottschalk-Gleser scales:
 - (1) Anxiety
 - (2) Hostility Directed Outwards
 - (3) Hostility Directed Inward
 - (4) Ambivalent Hostility
 - (5) Hope
 - (6) Human Relations
 - (7) Health-Sickness
 - (8) Cognitive Functioning

2. Subsequently, the patient is seen and measurements are made on twelve additional occasions: pre- and post-sham, pre- and post-radiation treatment, and on days 1, 3, 7, 14, 21, 28, 35, and 42. On each such occasion those measurements labeled a, c, e, and f, above, are repeated. In addition, patients are seen for supportive care at any time they request or it seems necessary.