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CAN WARD ROUNDS BE A DANGER TO PATIENTS WITH MYOCARDIAL INFARCTION?

BY

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Like physical effort, emotional stress may bring on anginal pain in a patient suffering from a disease of the coronary arteries. The contributory effect of mental tension can often be shown even in cases of myocardial infarction. Besides physical rest, complete mental rest is a fundamental requirement in the treatment of myocardial infarction (Miller, 1942; Stroud, 1945; White, 1945; Scherf and Boyd, 1947; Friedberg, 1950; Levine, 1951). Physical rest is usually easy to organize: bed rest in itself guarantees it. A more difficult factor to control is mental rest. Internal mental stresses may affect the patient to such a degree that it is difficult to control them. This makes it all the more necessary that attention should be devoted to the external factors disturbing the patient's peace of mind.

Contacts in Hospital

For the in-patient, contact with others doubtless causes the strongest psychological stresses to which he is exposed. The persons with whom the patients come into contact are the patient's relations and friends, other patients, and hospital personnel.

Relations and Friends.—It is often found that the visit of a certain relative or friend to a patient with myocardial infarction does not have the desired effect of soothing him. On the contrary, one result of such a visit may be increased pain. This is an occurrence that can, of course, be avoided

if the attending physician, in serious cases, decides which visitors may be allowed to see the patient, and how often.

Other Patients.—The patient with myocardial infarction reacts differently towards his fellow-patients than towards his relations. The influence of the patient in the next bed may be soothing, that of another irritating. By choosing the patient's bed the mental stress arising in this way may be eliminated. In serious cases of myocardial infarction the practice in our clinic is often to place the patient in a single-bed room to start with.

Hospital Personnel.—Of the hospital personnel, only nurses and physicians come into close contact with cases of myocardial infarction. In selection and training of the nurses emphasis is placed upon those qualities that have a reassuring effect on the patient. It may be taken as read that credit for preserving the patient's peace of mind must go to the nurses. What is more difficult to assess is whether the attending physician may not introduce emotional stresses deleterious to the patient. Calmness of the doctor and wisely worded pronouncements by him may have a beneficial influence on the patient's worried state of mind. On the other hand the patient with myocardial infarction, knowing that his condition is dangerous, is probably anxious about the doctor's verdict. This may induce a harmful state of excitement. My personal experience has been that on several occasions, just as the ward round has advanced to the patient suffering from coronary disease, or, more often still, to the patient preceding him, he gets an attack of angina pectoris, in some cases fatal.

The present paper is an attempt to ascertain, by analysing the fatalities from sudden myocardial infarctions, whether the ward round may be a danger to such patients. No analysis of the anginal pain felt by these patients and possibly associated with the doctor's round has been included, for the simple reason that it is generally impossible to show these pains objectively.

Material

The material investigated is taken from the 373 patients with myocardial infarction treated in 1950-3 at the Third Medical Clinic of Helsinki University, and comprises those who died of acute myocardial infarction while in hospital. Where the death occurred later than six weeks after the acute myocardial infarction the case is not included. The series consists of 84 cases in which death occurred—69 male and 15 female. The average age of the male patients at the time of death was 57.4 years, and of the female patients 66.5 years. In 47 cases the diagnosis was confirmed

TABLE I.—Analysis of 84 Deaths from Acute Myocardial Infarction

Age Group	Male	Female	Lapse of Time from Onset of Infarction to the Moment of Death		
			24 Hours	7 Days	8 Days-6 Weeks
30-39	1	0	—	—	1
40-49	12	0	7	2	3
50-59	26	1	6	6	15
60-69	24	9	7	8	18
70-79	5	5	3	5	2
80-...	1	0	1	—	—

at necropsy. Table I gives details of the age and sex distribution of the 84 cases and the lapse of time between the onset of infarction and death. It shows that the first 24 hours accounted for a considerable proportion of the total deaths. A probable contributing factor is that all the patients lived in the neighbourhood of the clinic; this means that serious cases were admitted to hospital more or less immediately after the attack of infarction. In hopeless cases, therefore, death occurred in the hospital more often than would have been the case had the distance of transportation been longer. In addition, Table I shows that 45 of the patients died within seven days of the attack. As the first week must be regarded as a very critical period for these patients, it was thought undesirable to draw conclusions

from them even when a ward round coincided with death. Only when the patients survived for more than seven days have the cases been analysed.

Results

The 39 patients who died more than seven days (but less than six weeks) after a sudden attack of myocardial infarction included six whose death was closely associated with a ward round. Table II gives details of these six cases. As the

TABLE II

Case No.	Age and Sex	Occupation	Duration of History of Angina (years)	Interval from Onset of Myocardial Infarction to Death (days)	Necropsy
1	58 M	Intellectual worker	1	37	+
2	61 M	Manual	0	19	+
3	62 F	Housewife	6	41	+
4	65 M	Manual worker	0	32	+
5	67 M	Intellectual	1	32	—
6	68 F	"	12	9	+

factors associated with the last ward round are important in these cases detailed histories are given below.

Case 1.—A chief accountant aged 58 had had a severe attack of angina pectoris at home. Twenty-one days later, as the pain persisted, he entered hospital. Examination indicated a myocardial infarction of the posterior wall. There was no pyrexia. The E.S.R. was 36 mm. in one hour. The customary anticoagulant treatment was not given. From the beginning he was allowed to sit daily in an easy chair. Slight cardiac insufficiency disappeared with mild digitalis treatment. Emotionally he was abnormally labile. Up to the sixteenth day in the ward his condition had been satisfactory, both subjectively and objectively. That day, however, the physician-in-chief was on his round; the patient became more excited than usual, and when the round reached him he began to feel nausea, which soon developed into severe thoracic pain. In spite of the doctor's efforts, death ensued in approximately two hours (at 12.35 p.m.). *Findings at Necropsy.*—Thrombosis of right coronary artery. Thrombosis of superficial anterior descending branch and of left circumflex coronary artery, with myocardial infarction. Congestion of the lungs. Mild congestion of the liver. Mild nephrosclerosis.

Case 2.—A switchman aged 61 had had a severe anginal attack two days before admission, followed by slighter but persistent pain. Repeated E.C.G.s gave no positive indication of a fresh myocardial infarction, although signs of myonecrosis were seen. On the basis of the clinical picture, however, the diagnosis was regarded as clear. A temperature of 100.4° F. (38° C.) persisted for five days, and his E.S.R. rose to 99 mm. After the temperature had subsided slight signs of cardiac insufficiency were noted. Careful digitalis treatment was started, and bed rest and anticoagulant treatment were continued throughout his stay in hospital. The patient seemed calm but slept poorly. On the seventeenth day, as the ward doctor approached his bed, he had a severe attack of pain and died immediately (at 9.15 a.m.). *Findings at Necropsy.*—Thrombosis of left coronary artery. Myocardial infarction and cardiac hypertrophy and dilatation. Thrombosis of left ventricle. Pulmonary congestion, oedema, and emphysema. Small right-sided pleural effusion. Congestion of liver and kidneys. Some softening of the cerebral cortex on the left side. Strawberry gall-bladder.

Case 3.—A works foreman's wife aged 62 two weeks before admission to hospital had had an attack of thoracic pain which did not completely subside with nitroglycerin. An E.C.G. taken on admission showed no clear signs of a fresh myocardial infarction. However, the clinical picture was clear enough to warrant the diagnosis, and the customary treatment with anticoagulants was given. There was no rise in temperature. The E.S.R. reached its peak, 35 mm., at the beginning. Forty-one days after the assumed infarc-

tion the patient died while the physician-in-chief was on his rounds. She had been out of bed for eight days and was impatiently awaiting her discharge from hospital. For several days she had been informed that the physician-in-chief would decide about her discharge on that very round. While he was at the bedside of the patient next to her (at 9.20 a.m.) she began to pant, and jerks were observed in the extremities. Respiration continued for a while, but heart action could not be restored. *Findings at Necropsy.*—Thrombosis of left coronary artery. Myocardial infarction. Apical aneurysm of left ventricle. Thrombosis of left iliac and femoral arteries. Pulmonary oedema.

Case 4.—A painter aged 65 had had a severe attack of thoracic pain three weeks before admission to hospital, followed by persistent distress. The E.C.G. taken in hospital showed signs of an extensive myocardial lesion. Myocardial infarction was considered to have occurred in connexion with the pain. His E.S.R. was 45 mm. in one hour. There was no rise in temperature. Seroreactions for syphilis were positive. The medical history was not indicative of syphilis. Mesaortitis was suspected. He received treatment for cardiac insufficiency, and was given penicillin. After ten days in the ward the patient suddenly fell from his bed when the ward doctor on his round reached the room (at 9.45 a.m.). Cardiac action could not be restored. *Findings at Necropsy.*—Thrombosis of right coronary artery. Cardiac hypertrophy and dilatation. Myocardial infarction. Mural thromboses in left ventricle. Pulmonary congestion, oedema, and emphysema. Congestion of the liver. Specific aortitis. Gall-stones.

Case 5.—A business man aged 67 was admitted to hospital on the day of his attack of myocardial infarction. An E.C.G. showed indications of posterior wall infarction. His temperature rose to 99.2° F. (37.3° C.), and the E.S.R. to 45 mm. in one hour. Apart from the first 24 hours he had no pain while in hospital. He was given the customary treatment with anticoagulants. Recovery seemed to proceed well. The E.S.R. dropped evenly. After four weeks it was 10 mm. in one hour. As the patient insisted, he was promised discharge after 32 days in hospital, treatment to be continued at home. He had waited for the round during which the discharge was to be decided on finally—so much so that he had had his clothes brought to the ward. Immediately after the doctor on the round had granted him permission to go home he began to dress, but collapsed and died by the side of his bed (at 11.35 a.m.). Permission for necropsy was refused.

Case 6.—A female Post Office clerk aged 68 was admitted to hospital for thoracic pain, which had started the night before in connexion with an emotional disturbance. Previously, too, anginal pain was associated almost exclusively with a feeling of resentment. An E.C.G. indicated myocardial infarction of the posterior wall. Her temperature rose in hospital to 99.5° F. (37.5° C.), and the E.S.R. to 58 mm. in one hour. Subjective complaints rapidly subsided in the ward. The customary anticoagulant treatment was given. She was psychically very labile and grew excited over trivialities. After nine days in hospital, and when the physician-in-chief was on his round in the eight-bed room in which she lay sixth, she grew restless as he reached the patient preceding her. On being asked how she felt she began to reply, but suddenly she went highly cyanotic, started to pant, and the heart ceased to function (at 9.30 a.m.). *Findings at Necropsy.*—Right coronary thrombosis. Myocardial infarction. Rupture of left ventricle. Haemopericardium. Congestion of the lungs.

Discussion

Six of the patients who had survived the first seven days but died while still in hospital before six weeks had elapsed from the acute myocardial infarction, died in connexion with the ward round. The occurrence of such a remarkable accumulation of fatalities simultaneously with the ward round cannot be ascribed to coincidence. If the 24 hours

of a day and night are divided into six-hour periods beginning from midnight, the fatalities are distributed over these periods as follows: 11, 10, 7, and 11—thus fairly evenly. In our clinic the ward round in each room takes from a half to one hour. Had the 39 fatalities not occurred during a ward round more frequently than at other hours, only 0.8 to 1.6 fatalities should have occurred during them. But these deaths totalled 5. (In Case 1 death did not occur until two hours after the round, although the fatal attack began during it.)

A closer association between these fatalities than is provided by mere coincidence is strongly suggested by the course of several individual cases. It also seems that the explanation for this phenomenon can be found in the state of excitement that may be brought on in some patients by the doctor's visit. Two deaths occurred when the patients were told that the time for their discharge, so eagerly awaited, had come (Cases 3 and 5). In two cases (Cases 1 and 6) the patient habitually got excited during the visit. Perhaps it was no coincidence that three deaths occurred in connexion with the round of the physician-in-chief, repeated only weekly or bi-weekly in each ward.

On the basis of the foregoing it is possible that there may be a serious hidden risk in ward rounds for the patient with myocardial infarction, since on these occasions he is subjected to an unusually severe emotional stress. This danger is clearly very difficult to avoid in the case of an unusually labile patient, but it is always possible to reduce it. The adoption of the following precautions may lead to improvement in this respect.

(1) To ensure that the attending doctor is aware of the risk, and takes heed of it in his attitude to the patient. According to Stroud (1945), the most important point in treatment is a sympathetic attitude on the part of the doctor towards his patient. (2) It is advisable not to emphasize excessively the importance of ward rounds to a patient with myocardial infarction. Where such emphasis is made it may not be the doctor's fault so much as owing to the attitude of the nursing staff. The patient may well have been told of the great importance of the round of the physician-in-chief, the beds may have been made with great care and speed, and other special preparations made for the expected visit. Presumably the patient's state of mind, susceptible to excitement, receives an added stimulus from this general state of bustle in the ward. This is by no means the case everywhere, but, so far as I can see, these disadvantages increase as the "formal" side of hospital life becomes more pronounced. (3) The administration of sedatives when any signs of a state of excitement are observed in a patient with myocardial infarction is naturally very important. But, obviously, the mental rest secured by this means is not the same as that resulting from a successful removal of the factor accounting for the development of mental excitement.

Summary

Six out of 39 hospital patients affected with acute myocardial infarction who died more than seven days but less than six weeks after the onset of the infarction did so during or shortly after ward rounds. This cannot be dismissed as a coincidence. Four of the ward rounds in connexion with which the deaths occurred involved, even to the casual observer, an unusually heavy mental stress to the patient. In two cases discharge from hospital, eagerly awaited by the patient, was to be decided upon at that very occasion. In another two cases the round was that of the physician-in-chief, made only once or twice a week.

The conclusion is that the ward round may sometimes constitute such a heavy strain on the patient that in cases in which this stress may be deleterious, as in myocardial infarction, it may constitute a danger. Means of reducing this risk are discussed.

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ARRESTED MENTAL DEVELOPMENT INDUCED BY LEAD-POISONING

BY

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This paper is based on the clinical history of a boy aged 7½ who, as result of lead ingestion, suffered arrested mental development and is now a mentally defective person in institutional care. The data on which his case history has been compiled are derived from the interim reports of clinicians who attended him at various stages of his long illness and his mother's account of the sequence of events and their attendant circumstances. The case is reported in part chronologically, and in part in the order in which relevant information materialized, so that the diagnostic problems which arose may be appreciated as they were presented to the physicians concerned and so that the importance of early and adequate diagnosis in such cases may be emphasized.

Case History

The patient's mother, a woman of apparently average intelligence, reported that her son was an only child. His birth weight was 6½ lb. (2.9 kg.), and both pregnancy and delivery were uncomplicated. He developed normally in infancy, sitting up at 7 months, walking at 17 months, and talking at 18 months. By the age of 2 years he had achieved sphincter control and was repeating nursery rhymes. He was duly inoculated against diphtheria and whooping-cough, and the family doctor confirms that he was a normal infant. The mother states quite definitely that the child was more than 3 years old when he had an illness, diagnosed as "food-poisoning" and associated with intestinal symptoms and an itchy rash. In the course of about six weeks the latter faded; but thereafter he developed a cough, worse at night, accompanied with almost continuous vomiting. She says that whooping-cough was prevalent at the time and the illness was so diagnosed, although the child did not "whoop."

A neurologist, consulted when the patient was aged 5, reported that the severe illness, believed to have been whooping-cough, occurred when the child was 2½; but in all other matters confirmed the mother's version of the past history. His opinion was that the severe illness may have been encephalitis, following or complicating whooping-cough, and that its sequelae were regression and an acquired aphasia (both receptive and executive). Thus the child's performance I.Q. was only 58. The mother was therefore advised to send this ineducable boy to an occupation centre while he was kept under observation at the outpatient department. He was given a course of glutamic acid.

The third medical report relates to the patient's condition when he was 5½ and under observation at another hospital. He had been referred because he was unable to talk, ignored