EFFORT SYNDROME IN ICELAND

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During the fourteen months from April, 1941, to June, 1942, 83 cases of effort syndrome were observed among the British forces in Iceland. A review of these cases has been made in order to determine whether the conditions of service in Iceland, thought by some to be out of the ordinary, play any significant part in the development of the syndrome.

Observations

Of the 83 cases, 3 were from the Navy, 2 from the Air Force, 1 was a civilian employee (British), and 77 were from the Army. Of these men 63 (76%) were considered unfit for active service in the field and were returned to the United Kingdom as a result of a Medical Board examination (Category "D" or "E"—A.C.I. 1428/40). The remaining 20 (24%) were considered mild cases, and after suitable reassurance were returned to their units for full duties.

Age and Length of Service.—The average age in this series was 29½ years (18–48), and the cases were distributed as follows: under 20, 1; 20–29, 44; 30–39, 32; 40–48, 6. The distribution corresponds roughly to the age-group representation in the Forces. Eleven had seen service before the present war; 67 had served during the present war only, for periods varying in length from three months to two and three-quarter years.

Seasonal Incidence.—Forty-three cases (52%) were seen during the inclusive period Nov., 1941, to April, 1942, and 34 (41%) during May to Oct., 1941.

Aetiology.—No cases were considered to have been directly caused by war service, but of the 63 cases evacuated five appeared to have been aggravated by war service. The first of these men suffered from hypermetropia, and claimed that "the light bothers my eyes" (see under "Discussion"). Reassurance did not improve his condition, and he eventually showed other features of the syndrome. Another, a reservist aged 38, felt he couldn't "keep up" with the younger men in his unit. A third, a company sergeant-major, went through the Norwegian campaign five weeks after an operation for bilateral inguinal hernia. The fourth case was that of a soldier who had always been employed in sedentary duties. He broke down shortly after coming to Iceland when he started intensive training. The symptoms in the fifth case appeared after hospitalization for "acute rheumatism" in Sept., 1940.

Attributability.—All of the 58 cases considered unconnected with war service that were evacuated showed either a poor family history or a past personal history of "constitutional inferiority," or both. It was not difficult to reveal the familiar historical pattern of an over-protective parent firmly implanting the conception of delicate health in the mind of the child or adolescent. The attributability in this series has been summarized in Table I.

TABLE I.—Attributability of Effort Syndrome

Attributability	Number of Cases		
	Boarded	Returned to Duty	Total
Caused by war service ..	0	0	0
Aggravated by war service ..	5	2	7
Unconnected with war service ..	58	18	76
Total	63	20	83

Symptoms and Signs.—The symptoms exhibited were the familiar group fully described in Dr. Paul Wood's Goulstonian Lectures for 1941. The relation between the onset of symptoms and service in Iceland is shown in Table II. Investigation of the patient included a history, physical examination, and radiological examination of the thorax. It was exceptional to admit these cases to hospital. In common with other observers, an increase in the pulse and blood pressure was noted. The

average blood pressure of 70 cases was 141.6/84.2. The highest systolic pressure was 174 (diastolic 74). The highest diastolic pressure was 112 (systolic 164). As expected, the diastolic

TABLE II.—Date of Appearance of Effort Syndrome

Date	Number of Cases		
	Boarded	Returned to Duty	Total
Before service in Iceland ..	59	15	74
Subsequent to service in Iceland ..	4	5	9

pressure fell to 90 after two days in hospital. The mean pulse pressure was 57.4 mm. Hg. The exercise-tolerance test was not found to be of diagnostic value.

Differential Diagnosis: Hypertension.—A systolic pressure above 170 mm. Hg or a diastolic pressure persistently above 100 mm. Hg is required for a diagnosis of hypertension. These are admittedly arbitrary figures. But in the absence of other findings a systolic pressure of 170 mm. or less and a diastolic pressure under 100 mm. were considered within the limits of normal.

Discussion

The unusual features of service in Iceland that might be thought productive of the syndrome can be summarized as follows:

1. **Topography.**—Iceland is a mountainous country devoid of trees, and with sparse vegetation. The earth's surface is very uneven, being covered with much broken lava rock, varying in size. This makes walking a more attention-claiming pastime than it is elsewhere.

2. **Climate.**—Because of the country's latitude there is a long period of daylight during the summer months and a short period of daylight during the winter months. It is held by many that the light is "stronger" than elsewhere, but this is considered to be fallacious. Both the ophthalmologist and myself have often been confronted with the complaint, "It's the strong light, sir" (cf. case mentioned above). On the other hand, the shortness of natural light in the winter means a long dark day, which might result in introspection, boredom, and depression. This appears to be adequately compensated in the normal individual by the absence of black-out regulations. The cold in Iceland is not intense, and it is generally held that the country has been misnamed. The snowfall is very moderate, and in most areas the snow rarely remains on the ground throughout the whole winter. On the other hand, training during the Icelandic winter of rain, mud, and darkness requires a robust physique and an equally robust mental outlook.

On the whole, these conditions have not been found to be causative factors in effort syndrome, but it is worth recording that the number of cases of effort syndrome referred increased considerably (a) during the period of intensive training, and (b) among the drafts of reinforcements from the United Kingdom shortly after their arrival in Iceland. The case incidence was slightly greater during the winter months (November to April), but this was also the period of intensive training and when drafts of reinforcements were arriving.

The great majority of these cases were already psychologically predisposed to develop the syndrome. This they did when they were confronted with the physical and psychical difficulties of "active service in the field." The small number of cases occurring among Naval and Air Force personnel was not accounted for by the numerical proportion of these Services in Iceland: perhaps the explanation lies in a greater selectivity of candidates for them.

The subsequent history of the more severe cases is not known, as they were evacuated.

Summary and Conclusions

Eighty-three cases of effort syndrome have been observed among British troops serving in Iceland; 63 of these were considered temporarily or permanently unfit for military service.

The conditions of military service in Iceland are not considered causative factors in the development of effort syndrome. They are regarded as aggravating factors to a minor extent only.

The number of cases brought to light increased during the intensive training and following the arrival of drafts of reinforcements from the United Kingdom.

Simple explanation and return to duty at the unit have been successful in some of the milder cases of the syndrome.

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Medical Memoranda

Severe Gunshot Wound of the Abdomen

The following report of a case of severe gunshot wound of the abdomen, occurring on board one of His Majesty's transports in mid-ocean, is of interest.

CASE HISTORY

A gunner aged 26 was accidentally wounded by a rifle bullet in the abdomen at 11.50 a.m. on April 17, 1942. The bullet, before wounding him, had passed through the hand of another soldier. The gunner was seen five minutes after the injury lying on the ship's lowest deck, holding his abdomen. He was very pale and in great pain. Morph. tartrate 1/2 gr. was given immediately. On disengaging his hands and unbuttoning his battle-dress it was found that most of the small intestine, the caecum and appendix, and a large portion of the omentum had prolapsed and were lying over the pubic region and between the thighs. The lower portion of a vest partly covered the viscera, the remainder lying free in his trousers. Six or seven shell dressings were needed to gather up the loose bowel and to hold it in place outside the abdomen. The bandage ends were gently passed around the trunk and fixed with pins. He was then placed carefully on a stretcher, with two life-jackets under the flexed knees and four life-jackets behind the shoulders and head. In this position he was carried up through four decks to the ship's hospital. Twenty-five minutes later he was given 600 c.cm. of fresh blood, and at 12.50 p.m. was placed on the operating table, not having been previously moved off the stretcher.

Operation.—Under a general anaesthetic (open ether) the whole of the prolapsed bowel was covered with sterile gauze pads partially wrung out in 1/20,000 aqueous solution of euflavine. More gauze swabs, similarly treated, were partially introduced over the wound edges into the abdomen by raising the prolapsed bowel at the wound perimeter, as a preliminary to the replacement of the bowel after inspection. The only visceral damage discovered was an abrasion of the ileum, 3½ in. long and 1/4 in. wide, involving the outer coats of the bowel: this was longitudinally inverted with Lembert sutures of fine catgut. All the prolapsed bowel was then replaced within the abdomen and covered with omentum, which had escaped injury. The whole abdominal wound was now in view. It was large and gaping and of the size of a hand, equidistant between the umbilicus and pubis, and was obviously caused by a splayed bullet running from side to side, gouging away in its path all the structures of the abdominal wall. The wound edges were then excised, and by flexing the spine the retracted peritoneal edges were approximated and completely sutured. The right rectus muscle was deficient for about 3½ in.; this was repaired by sliding across the damaged but not deficient left rectus and anchoring it with interrupted sutures, over which the anterior sheath was closed, haemorrhage from the inferior epigastric having been controlled. The internal and external oblique aponeuroses were closed by interrupted sutures. The skin wound was closed without difficulty by interrupted sutures, over which two rolls of flavine-soaked gauze were placed and held in position by six deep tension sutures. The skin wound resembled a large "Y" with a very short vertical limb, the two oblique limbs each being drained by a rubber tube inserted down to the superficial muscle plane. The operation lasted two hours, at the end of which the patient's condition was good; his colour had returned and his pulse was steady at 78 per minute. He was then put into an adjacent single-cot cabin, where he was nursed for the remainder of the voyage.

Progress.—On his return to consciousness he was placed in Fowler's position and 500 c.cm. of saline was given subcutaneously. The following treatment was instituted: Inj. morph. hypoderm. 1/4 gr. four-hourly; pituitrin 10 units six-hourly; sulphapyridine, 3 g. statim, 2.5 g. three hours later, and 1.5 g. at three-hourly intervals till noon of the second day. (Sulphapyridine was continued four-hourly in decreasing daily doses until the end of the fourth day, by which time a total of 30 g. had been given.) His general condition six hours after the operation was good, and he was free from pain and able to take dextrose in water and weak lime-juice; temperature and pulse normal. Urine in adequate quantities was passed during this period. The blood count was normal. This happy state of affairs continued until midnight on the fifth day, when a feeling of distension was complained of. No bowel motion had as yet occurred since the operation, but enemata had been given daily and had prevented distension. By noon of the fourth day, however, signs of paralytic ileus became evident, and faecal vomiting occurred. Continuous rectal saline was then started and 2.5 units of pituitrin were given hourly together with morphine 1/4 gr. four-hourly. The patient's condition worsened considerably, but the temperature never rose above 99.4°. The morphine and pituitrin and continuous rectal saline were persisted with, and on the sixth day the patient's condition dramatically changed for the better with the passage of a

large liquid stool. Within two hours he was comfortable and in excellent spirits, and demanded a cup of tea and a cigarette. As the ship's stock of pituitrin was now depleted, physostigmine was given in two-hourly doses of 1/200 gr., together with morphine eight-hourly. On the third day the wound was dressed and the drainage tubes removed, being replaced by lightly packed gauze swabs, which were renewed on the seventh day. Sloughing was considerable at the drainage exits, but otherwise the wound was satisfactory. On the eighth day, on arrival at a home port, the patient was transferred to a shore hospital; his condition was excellent and the bowels normal. Subsequent progress was rapid, though the drainage exits continued to discharge profusely. Although the wound itself healed well, it was considered advisable to explore the discharging sinus. This revealed a gauze superficial-drainage swab (which had replaced the original rubber drainage tube) that had been overlooked in the slough. The removal of the gauze was followed by rapid healing, and the patient was discharged to a convalescent hospital. Although the abdominal scars are extensive, there is no evidence of tendency towards ventral hernia. He has since returned to duty in a coastal battery in medical category C.

I wish to acknowledge with gratitude the services of Sister J. Douglas, T.A.N.S., of Edinburgh, to whose skill and devotion this patient's recovery is mainly due. I would also thank the medical superintendent of the E.M.S. hospital for his helpful notes on the patient's progress ashore.

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The Cotton-wool Sandwich

The swallowing of sharp-pointed foreign bodies presents a problem to the practitioner, often at a moment's notice, and provides a source of anxiety for him, his patients, and their relatives. I have recently been struck by the fact that so few doctors realize the value of the cotton-wool sandwich. The following case exemplifies the value of such.

Miss A. B., a dressmaker, was referred to the radiological department at the Whitehaven and West Cumberland Hospital on Sept. 9, 1936, because she had swallowed "a pin." My

FIG. 1

FIG. 2

radiographer (Sister Hankinson, M.S.R.) screened her and took a film demonstrating the presence of 23 pins at all angles within the gastro-intestinal tract. She promptly gave the patient a series of small cotton-wool sandwiches, having impregnated the teased-out cotton-wool with a solution of barium sulphate in order, if possible, to follow the progress of the pins. Later in the day I saw the patient personally, and found one pin in the stomach, two pins in the duodenum, and a considerable number in the small bowel, mainly in the pelvis, intermingled with the barium-impregnated cotton-wool (Fig. 1). The pledgets of cotton-wool are seen mainly in the pelvic ileum. One pin was in the caecum, others in the descending and the iliac colon. The following day one pin was in the caecum and the rest were collected into four groups (Fig. 2)—one group in the splenic flexure of the descending colon, one in the iliac colon, and one at the proximal pelvic colon—all enveloped in the cotton-wool. A fourth small group is seen in the rectum, in which no wool is evident.

FIG. 3

The progress of the pins was checked up each day by radiological means. Each group was evacuated in turn at daily intervals: the film of Oct. 10 (Fig. 3) shows the last group enveloped in cotton-wool in the rectum. The following day all had been evacuated, without any pain or one drop of blood being shed.

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