way be precipitated in a susceptible patient. It may be that the development of an acute glaucoma, which on rare occasions follows operation and which has previously been ascribed to premedication with atropine, may really have been due in whole or part to this phenomenon. It is necessary to point out that in this series of cases hyoscine and not atropine was used pre-operatively; all readings were taken with the Schiötz tonometer, and in conscious patients gutt. holocaine 1% was used as a local analgesic.

Summary

Thirteen cases of unilateral hypotony have been described following anaesthesia in a series of 300 cases.

The aetiological factor has been shown to be the pressure exerted by the rim of a badly adjusted face-mask, and the importance of the choice of a correct size and shape of mask is stressed.

The nature, length of operation, age and condition of the patient, and type of anaesthetic used, seem to play little or no part in the production of this unilateral hypotony, although pentothal sodium, which is known to cause a bilateral reduction in tension, no doubt tends to exaggerate the effects caused by pressure, as instanced by Cases 1, 12, and 13.

The possibility of the occurrence of acute glaucoma in the affected eye should be borne in mind, as the lowered intraocular tension is followed by a rise above the normal which may last for some hours.

We are indebted to Mr. C. H. Bamford for his continued help and encouragement during this investigation, and also to the other members of the honorary surgical staff for permission to publish their cases.

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PSYCHOLOGICAL REACTIONS IN THE WOUNDED

BY

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Apparently it is a fairly commonly held view that the wounded who develop neuroses have only slight injuries and that those who are severely wounded rarely suffer from neurosis. The reason given is that those who have severe wounds are sure of being removed from the fighting area, at least for some considerable time, while the man with a slight wound may return to the front line in the course of a few days. According to those who hold this view, the neurosis is therefore an escape mechanism.

Investigation of a Group admitted with Neuroses

The development of a neurosis cannot be explained in this simple manner, and in order to ascertain the true facts of the relation of wounds and neurosis, 54 patients who had been wounded and were admitted to the neurosis centre here were investigated. Of these, 39 were suffering from anxiety states, 8 from depression, and 7 from hysterical states. Their wounds were divided into three categories—viz., severe, moderate, and slight. In the first category were included, for example, mortar wounds of the right side of the face and the right leg (compound fracture), penetrating wounds of the chest, petrol burns of the face, neck, arm, etc. Among the moderate wounds were included g.s.w. of the right calf, g.s.w. of the left shoulder and forearm, shrapnel wounds of the mouth, etc.; while the slight wounds consisted of bullet wounds of the fingers, superficial shrapnel wounds of the arm, etc. No head wounds were included, because of the special circumstances and symptoms associated with the post-concussive and post-traumatic syndromes.

On this basis 24 patients had sustained severe, 26 moderate, and only 4 slight wounds. In assessing the category into which the patient should go, the wounds were regarded as being less severe than they actually were, so that over-emphasis was not laid on the severity of the injury. It will be seen, therefore, from these figures, that those with slight wounds are not the ones who predominantly develop neuroses. In investigating these cases, however, several interesting points emerged.

First, constitutional predisposition is the most important factor, and was present in 46 of the 54 cases. This consisted of a neurotic, psychopathic, or psychotic family history, a neurotic personality (timid, worrying, moody, seclusive, inadequate, etc.), or a poor work record. In 23 cases there was a combination of a positive family history and a neurotic personality. This constitutional element is by far the most important factor in determining a neurosis, but by no means the only one.

Another striking feature is that of these 54 patients 46 had what may be called extremes of length of service. In other words, the men who had short service—viz., from 1 to 1½ years—and then went into action, or those with 4 years or more, and were wounded, seemed to be more prone to break down. This may be due in the former to a lack of confidence and the fact that they had not been in action before. By this it is not suggested that all men who go into action for the first time and are wounded develop neuroses; but these men had, as stated, a constitutional predisposition. When men have been in action together for some time a marked feeling of camaraderie develops which helps to give the neurotic a feeling of confidence.

Many of the men with long service had been through severe stresses already—viz., the evacuation from Dunkirk, fighting in N. Africa, Italy, Tunisia, Burma, etc.—and the cumulative stresses, together with four to five years' separation from their families, were sufficient to produce neuroses in constitutionally predisposed persons. Many of these patients, although somewhat anxious and apprehensive in action, were able to carry on until they saw their pals being killed at the same time that they themselves were wounded, and this often precipitated a neurosis.

A personal worry is often the final precipitating factor. For example, one patient who was wounded by a flying bomb in Belgium was perfectly all right until he realized that his family was in a part of this country exposed to flying-bomb attacks. He then became anxious and apprehensive. Another patient, who was at Arnhem, had mild anxiety symptoms, which became acute on arriving in this country when he found out that his wife, who was pregnant, had been bombed out and had no home to which to take the baby when it arrived. Much can be done by the welfare authorities to help patients in clearing up their domestic worries.

Another factor in some cases was the extent to which the wound would interfere with the patient's peacetime career. Here reassurance or the use of the Ministry of Labour scheme for retraining of disabled men can help in overcoming this difficulty. The proportion of volunteers to conscripts was 22 to 32, and did not seem to be of any great significance. Nor did the question of age, which ranged from 19 to 38.

Analysis of a Group admitted for Surgical Treatment only

At the same time that those wounded who were admitted with diagnosed neuroses were examined, 38 wounded patients on the general side of the hospital were examined from the psychiatric point of view. Of these 38 cases, 18 were regarded as seriously wounded, 17 moderately, and 3 slightly. Although these patients were admitted for treatment of their surgical conditions only, 17 were suffering from definite anxiety states. All the 17 showed marked constitutional predisposition, and of the wounds 10 were regarded as moderate and 7 as severe.

In addition to these 17 patients, who required active psychiatric treatment, 11 others had anxiety symptoms for several weeks after they were wounded. These symptoms consisted of anxiety dreams in which they relived their battle experiences, palpitation, sweating, and a feeling of tenseness. Many of these men were considerably upset by air-raid alerts and sudden noises, whereas they previously had been quite unperturbed by them. When tied to their beds by extensions, etc., several complained of a feeling of helplessness when the alert went, and said they felt their "stomachs" turn over, they sweated, and their hearts thumped. Most of these patients were considerably helped by being given sodium amylal 3–6 gr. at night, and none of them showed any marked constitutional features.

Two of these cases of frank neurosis were first diagnosed by the sister of the surgical ward, as on coming round from

the anaesthetic after their operation the patients began to abreact their battle experiences. The psychiatrist on duty was called by her, and he continued the abreaction; and a day or two later these patients stated that they felt much less tense and anxious than before the operation. The remaining 10 patients showed no neurotic symptoms and had very stable personalities.

The age distribution and length of service were similar to those for the group admitted with neuroses, while the proportion of conscripts to volunteers was also comparable.

The degree of severity of a wound bears little or no relation to the development of a neurosis. Constitutional predisposition in the form of a positive family history, neurotic personality, or poor work record is the most important factor, while personal and domestic worry, severe battle stress, and length of service appear to be contributory factors.

It seems certain that a large proportion of wounded (in this series 28 out of 38=73%) suffer from undiagnosed anxiety or other neurotic symptoms, and it would seem important to question each battle casualty in base hospitals as to whether he suffers from battle dreams or other anxiety symptoms. In many cases the mild symptoms will clear up on giving sodium amytal, while the more severe cases should be referred to a psychiatrist.

Medical Memoranda

Uraemia and Heat-stroke: An Exercise in Diagnosis

The following case illustrates the importance of thinking again when signs and symptoms point to a certain diagnosis but the general clinical picture is not typical of, or even consistent with, the disease diagnosed. As my primary object in publishing it is to illustrate a diagnostic argument, I will describe the case as the problem presented itself and not as a clinical case sheet.

CASE HISTORY

A lad aged 20 complained of pain in the right groin, and frequent micturition with pain in the penis, after a route march in Italy. His M.O. found a tender swelling in the groin which was "reduced easily into the scrotum" and must have been the right testicle. He was admitted to the V.D. wing, where he continued to complain of dysuria and started vomiting. He had had two days' constipation. There was a rash on his body which was thought to be a sweat rash. He was transferred to the surgical division because strangulated hernia was suspected and there was no sign of venereal disease.

The surgeons found that there was a heavy albuminuria; the urine, in fact, solidified on boiling. There were also granular casts. He was somewhat vague mentally and lethargic; his tongue was dirty, and his temperature 101° F. He complained of weakness in the legs. The blood urea was estimated and found to be 108 mg. per 100 c.cm. The triumphant diagnosis of nephritis with uraemia was made, and the case was shown to the physicians as a *fait accompli*.

The physicians, however, had the bad taste to remark that the case conformed with no known type of nephritis. This was looked upon as a confession of ignorance, but it was argued that nephritis did not account for the frequent desire to pass small quantities of urine or for the pain on micturition. It could not be a case of terminal renal failure as the urine was highly coloured and well concentrated. If, on the other hand, it was acute nephritis severe enough to cause uraemia, why was there no haematuria, oedema, or hypertension? (The blood pressure was 105/90.)

A period of contemplation on renal and extrarenal causes of uraemia ended with the sudden revelation that it might be a case of heat-stroke. The patient was questioned again, and stated that the route march took place at the end of a "scheme" which had entailed several days' marching in the heat of the sun. On the final day he had been taking turns in carrying a heavy weapon in addition to his own equipment. Memory was refreshed by reference books, and it was established that the following symptoms may occur in heat-stroke: Mental changes, especially abnormal behaviour, leading in some cases to charges of insubordination; weakness and cramps; frequent micturition with pain in the penis; albuminuria; high blood urea; vomiting; loss of knee-jerks. The knee-jerks were tested and found to be absent. A qualitative test showed that chloride was virtually absent from the urine.

The forecast was made that with rest, fluids, and salt the patient would be cured in a few days. This was received with much scepticism, for in the minds of the surgeons albuminuria and uraemia could only mean Bright's disease. On the following day the blood urea was 88 mg., the mental condition had improved, the albumin was much less, and there were very few casts. Next day the albumin was less than 0.5 g. per litre. Two days later he was much brighter: no albumin, blood urea 48 mg. Five days later he was mentally normal and getting up: no albumin, blood urea 20 mg. per 100 c.cm., urinary chloride still somewhat diminished.

The mental state described in heat-stroke was nicely illustrated in this case. On the first day the patient described his urinary symptoms and the site of his pain in adequate but very vulgar terms, embarrassing in the presence of the ward sister. This was not considered to be diagnostic, as he came from the East End of Sheffield, but two days later gentility had returned and his nomenclature was completely revised.

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A Simple Test for the Detection of Bile Pigments in Urine

It has been shown that "adsorption colorimetry" may provide a convenient method for the estimation of coloured substances such as mepacrine (Yudkin, 1945a, 1945b). The principle of this technique is the adsorption of the coloured substance on to a measured amount of white adsorbent powder, the intensity of the colour produced being proportional to the amount of the substance. "Adsorption colorimetry" may also be used for a qualitative test, and the present communication describes a simple method for the detection of bile pigments in urine by this technique. It requires only one reagent.

THE TEST

Materials.—Test-tubes; silica gel powder (preferably sifted so as to pass 60 mesh but not 120 or 130); a scoop delivering 0.25 ml.

Method.—Take about 10 ml. of urine in a test-tube. Add about 0.25 ml. of silica gel powder by means of the scoop. Shake up the powder in the urine at intervals of 1 or 2 minutes by holding the top of the tube and swirling sharply once or twice. After ten minutes allow the tube to stand for a minute or two while the powder settles and then gently pour off the urine. Add a few millilitres of water, allow the powder to settle again, and gently pour off the water. A brown coloration of the silica gel indicates the presence of bile pigments. Mepacrine is also absorbed in these conditions, but its presence can be determined from the history of the patient and by the yellow colour developed on the adsorbent.

Sensitivity.—Some deeply coloured urines, containing no bile pigments, give a slight yellowish-brown colour. This is readily distinguished from the deeper and browner colour produced by even small quantities of bile pigment. By making dilutions of urine containing excreted bile pigments it was shown that the method of "adsorption colorimetry" will readily detect appreciably smaller quantities of pigment than those detected by the current "bedside" tests. It is, for example, about 15 times more sensitive than the iodine test and about 8 times more sensitive than Gmelin's (nitric acid) test. It compares favourably with the more elaborate laboratory tests, being, for example, only slightly less sensitive than the Fouchet test. With pure bilirubin dissolved in urine the approximate limits of sensitivity were as follows:

Test	Minimal Detectable Concentration, mg/100 ml.
Iodine	3
Gmelin's	1.5
Silica gel	0.2
Fouchet	0.1

COMMENT

An indication of the usefulness of the test in practice is given by the results of the analysis of 100 samples of urine. Of these, 58 samples were negative by all of the four tests mentioned; 42 were positive by both the adsorption and the Fouchet test; 8 were also positive by Gmelin's test; and only one was positive by the iodine test. All but one of the 42 positive samples were from patients with known hepatic damage. In these instances, therefore, the adsorption test was just as useful as the more elaborate Fouchet test and decidedly more useful than Gmelin's or the iodine test.

Silica gel powder, already sifted, may be obtained from Silica Gel, Ltd., Aldwych House, W.C.2.

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Major Rolfe M. Harvey (*Amer. J. Roentgen.*, 1944, **52**, 487) states that 18 of 500 consecutive cases of atypical pneumonia had fractured ribs, and in 9 of them the fractures were multiple. The occurrence of these fractures was not related to the severity of the pneumonia, and he believes they are caused by the severe, dry, irritating cough of this condition. He therefore suggests that, when excessive pain in the chest arises in the course of an atypical pneumonia and is difficult to account for by pleurisy, the possibility of a fractured rib should be borne in mind.