The B.S.R. group of 10 and over covers a variation from 10 to 100, and in Table IV a further subdivision is made of these values, taking 35 as an arbitrary dividing-line. The numbers at risk are so small that the trend of the death rates can be accepted as only suggestive; but the indication they give is that later mortality is likely to be lower with B.S.R. remaining steady at 10-35 or improving during treatment to that level from over 35 than it will be with an unimproved level of 35 or over at admission and discharge or a rise from 10-35 to over 35.

TABLE IV.—Percentage Mortality Rates after Discharge in Relation to High B.S.R. Figures

MALES				
Duration of Observation after Discharge (months)	Blood Sedimentation Rate			
	10-35 at Admission and Discharge	35 and Over at Admission and Discharge	35 and Over at Admission and 10-35 on Discharge	10-35 on Admission and 35 and Over on Discharge
Under 6	5.3	8.9	3.6	31.8
6-12	2.2	22.2	4.8	—
12-18	3.2	22.2	17.4	50.0
18-24	10.8	—	25.0	—
Total deaths ..	8	8	5	4
„ patients ..	58	23	28	7

FEMALES				
Duration of Observation after Discharge (months)	Blood Sedimentation Rate			
	10-35 at Admission and Discharge	35 and Over at Admission and Discharge	35 and Over at Admission and 10-35 on Discharge	10-35 on Admission and 35 and Over on Discharge
Under 6	0.9	—	4.6	—
6-12	1.8	9.3	—	9.5
12-18	4.3	8.3	—	14.3
18-24	2.8	—	—	—
Total deaths ..	6	3	1	2
„ patients ..	112	25	22	18

The conclusions from these statistics are therefore: (1) The higher the sedimentation rate on discharge from the sanatorium the more unfavourable has the average prognosis been. The association is clear with males, less clear but highly probable with females. (2) The bulk of the mortality experienced fell on the patients who were admitted with relatively high sedimentation rates and retained them at discharge. There is not sufficient material to determine whether the prognosis was better in those whose B.S.R. fell during sanatorium treatment than in those whose B.S.R. rose or failed to improve, but there is a suggestion that this is likely to be the case.

We wish to express our thanks to Dr. A. Bradford-Hill and Dr. R. C. Wingfield for their help and advice in the preparation of this article.

NON-PENETRATING INJURIES OF THE ABDOMEN

BY

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In these days of motor, industrial, and war accidents many of us frequently have to give an opinion on patients suffering from non-penetrating injuries to the abdomen. These injuries, as often as not, are sustained under unknown conditions, and the patient's history is of necessity vague and unhelpful. It is therefore timely to consider and evaluate the points that should influence the surgeon in answering the question, "Should this abdomen be opened or not?"

The answer to this question cannot be found in a single symptom or sign. It is a notoriously difficult problem, and Massie (1923) states: "There is no escaping the conclusion that early diagnosis is almost impossible. The surgeon must be guided more by a general consideration of the clinical picture than by the presence or absence of any particular sign." While no clinical diagnosis is infallible, guided by the following points one has been able to give a definite and immediate answer in most of the doubtful cases presented by a succession of harassed house-surgeons.

Diagnostic Points

Shock.—If seen soon after the accident the patient is in a state of typical and profound shock. Even apart from the fact that operation is out of the question in such a condition, the shocked patient is no fit subject for a thorough examination. The treatment of shock takes precedence over everything except external haemorrhage, and all agree that this latter should be temporarily controlled by the simplest means. If internal haemorrhage is of such magnitude as to prevent the patient recovering from the primary shock without operation, it can be safely assumed that a desperate operation to control the bleeding will kill him even sooner. One must be prepared to face the fact that a patient who is so severely injured that he bleeds to death internally without recovering from his primary shock is not a subject for surgery at all. But in most cases there comes a time when, under adequate treatment, the primary shock passes off and internal haemorrhage ceases spontaneously but temporarily. This time is usually about two hours after resuscitation measures have been started, and its recognition is the hall-mark of a good surgeon. To operate too soon will intensify the shock, and to operate too late will allow the blood pressure to recover and bleeding to restart; later, secondary shock sets in. Blood transfusions will help to increase the margin of safety, but as a rule the optimum time is short, and its recognition is a matter of urgency. Experience alone will help here, and it is in these doubtful cases that the experienced surgeon will operate on a larger proportion of patients, and though his percentage of operative failures may be greater he will show a larger absolute number of successes.

Pain.—This is always present, its severity being of very little importance. The pain is often localized to the part struck, and very often bruising and superficial abrasions will help to indicate the spot. While this is the site of maximum damage, it does not follow that a viscus has been injured: some of the most painful injuries are unaccompanied by any visceral damage at all. Often the pain may be referred and may be due to broken ribs, with injury to the lower six intercostal nerves, or to intrathoracic visceral damage. Occasionally the pain is referred to the tip of the right or left shoulder. This does not necessarily mean that there is subdiaphragmatic irritation; it may be due to trauma to the diaphragm itself or to supradiaphragmatic pathology. Still another pitfall is the presence of an unsuspected lesion of the spinal cord. There may be the most excruciating abdominal pain from such a lesion, which is not necessarily thoracic. I have had the mortification of performing a negative laparotomy on a patient who recovered and was later shown to have a fracture of a cervical vertebra with no other neurological signs to help in the diagnosis.

Tenderness.—All injuries of the abdomen will show some degree of tenderness. This tenderness may be acute, though the damage is superficial: an injured viscus usually shows local tenderness, but if this sign can be elicited at a neutral part of the abdomen it can be safely assumed that there has been some spilling of visceral contents. Because of this spill into the general peritoneal cavity remote tenderness can always be elicited, and is a valuable diagnostic point.

Rigidity.—For the same reasons local rigidity may be ignored. Its presence within the first hour or so cannot be elicited with assurance. Later, local bruising of the belly wall will give a wrong impression of rigidity. Remote rigidity is of vital importance and is diagnostic of perforation; it demands immediate laparotomy if the general condition of the patient will allow it. Its presence implies irritation of the parietal peritoneum, which can only be due to free blood or visceral contents in this cavity.

Pulse Rate.—All cases suspected of internal injuries are put on to half-hourly pulse charts as a matter of routine. A rising pulse rate which cannot be accounted for by external haemorrhage or by intrathoracic injuries should call urgent attention to the abdomen. A rising pulse rate alone is not an indication for laparotomy but for a careful general examination. In injured children the pulse rate often rises to 130 or 140 for no demonstrable reason, and, though it requires considerable restraint to hold one's hand, an hour or so may be safely spent in watchful anticipation. As characteristic of peritonitis this sign comes on late, and every effort should be made to diagnose without its aid.

Liver Dullness.—Loss of liver dullness often implies that free gas has become interposed between the liver and the parietes. It also is a late sign and should not be awaited. If the abdomen is distended this sign is not significant, but in the absence of distension or when combined with other signs it becomes important.

Leucocytosis.—The most bizarre counts may be found. Some cases with counts up to 30,000 white cells per c.mm. have shown no perforation and have cleared up on conservative expectant treatment, while others with equally large counts have required suture of ruptured viscera. Similar experiences can be recalled in the presence of normal and low blood counts. This investigation is often not available, and is usually not helpful.

Radiography.—When the primary shock has passed off it is the easiest thing to sit the patient up in bed and, after slipping a loaded cassette behind his back, to take a radiograph of the upper abdomen in the erect position. Pneumoperitoneum as indicated by fluid levels under either or both domes of the diaphragm is pathognomonic of free gas in the abdomen and is a simple, safe, and positive indication for laparotomy. The finding is of great positive value, but if negative it does not rule out haemoperitoneum, a ruptured bladder, or a small tear in the alimentary canal.

And, finally, if there is still doubt after one examination, re-examination an hour later has been found to be of the greatest value. Progressive tenderness or progressive rigidity is especially looked for, and a reassessment of the whole condition can then be made without the loss of too much valuable time. A comparison with the earlier examination will usually lead to a certain diagnosis.

Summary

The classical signs of ruptured viscera are considered.

The finding of tenderness and, more important, of rigidity at any part of the abdomen remote from the site of primary injury is considered to be the surest indication for laparotomy.

X-ray findings, if positive, can clinch the diagnosis.

The value of re-examination one hour later in doubtful cases is stressed.

REFERENCE

Massie, G. (1923). *Lancet*, 2, 643.

At the annual general meeting of the Society for Relief of Widows and Orphans of Medical Men, with Mr. V. Warren Low in the chair, the report and accounts for 1941 were presented and adopted. Sixty-three widows and two orphans received grants during the year, and £4,371 was distributed among them, each widow over 65 years of age receiving £75 and those under 65 £60, and each orphan received at the rate of £50 per annum. Relief is granted only to the widows or orphans of deceased members. Membership of the society is open to any medical man who at the time of his election is residing within a 20-mile radius of Charing Cross. Election is by ballot. The invested funds of the society amount to £139,000. Capital may never be sold and used as income. Full particulars may be obtained from the secretary, at the offices, 11, Chandos Street, Cavendish Square, W.1. Since the foundation of the society, in 1788, there have been six secretaries only. The first held office for 27 years and the fifth for 37 years; the sixth, Mr. Edward J. Blackett, has so far held office for 37 years.

Medical Memoranda

Chronic Headache caused by "Silent" Sinusitis

Usually we take very little notice of a headache. It may be due to a cold, influenza, or some other upset, and we know that when the cause disappears so will the headache. When no cause can be found, and yet the headache persists, constant or intermittent, severe or mild, month after month, year after year, then it becomes an unmitigated nuisance and a hindrance to life. Remedies and suggested causes fill the pages of our textbooks, and advertisements of quack remedies abound—sure signs that none can be relied on. Two cases of this nature are reported to show how easily the actual cause of the headache may be missed and the patient thus condemned to long years of helpless misery.

Case 1.—A spinster aged 59 had suffered from constant severe headache for 7 years. At times she had taken as much as 90 grains of aspirin in a day. Since there seemed to be no hope of relief her friends began to fear suicide. Sinusitis had been suspected, and she had been examined by three rhinologists, who were all agreed that there were no clinical signs. The first supported his opinion by radiographs; the second, after washing out the nasal cavities and examining the secretion microscopically, was emphatic that there was no infection. Nevertheless, the fact that the patient had post-nasal catarrh, together with marked contraction of her fields of vision, convinced me that there was sinusitis, and when at my request the third rhinologist opened the left antrum the disease was seen. A week after the antrostomy there was a sudden profuse flow of blood and mucus from the left nostril, and the pain at the vertex ceased. A year later she wrote: "I have practically given up aspirin, my head is so much better."

Case 2.—An unmarried woman aged 39, first seen in 1930, had had severe headaches from childhood. They were often quite incapacitating, and latterly had occurred daily. In the hope of relief all her teeth had been removed, her tonsils enucleated, and her septum straightened. When these measures failed no further suggestion could be made by rhinologist, ophthalmologist, or neurologist, and the patient and her doctor were in despair. Clinical signs of sinusitis were entirely absent even during the septum operation, and the x-ray report was negative. There had never been any catarrh. Nevertheless, the extreme contraction of her fields of vision led me to diagnose sinusitis as a cause of her headaches. Conservative treatment by nasal medication resulted in considerable nasal discharge and prompt relief of the headache. A year later she had "the best holiday of her life" and could "eat anything and go anywhere" without provoking the headache which formerly followed any indiscretion. In 1941, eleven years later, the patient reported again, well and happy, with only occasional moderate headache. (A fuller account of this case is given in *Proc. roy. Soc. Med.*, 1931, 24, 891, in which the fields before and after nasal drainage are reproduced.)

These two cases are merely outstanding examples of scores of others in which the existence of sinusitis has remained unsuspected as the cause of headache for many years, sometimes for a lifetime. The hidden nature of the cause suggests an explanation for the frequency of cases of unrelieved headache and of "migraine." When it is realized that though there may be nothing to be seen in the nose or in radiographs of the sinuses we can detect the activities of the hidden oedema around the inflamed sinuses by the fields of vision, these sufferers, hopelessly imprisoned by their own hidden sepsis, can be set free.

LonCon, W.

ROSA FORD, M.B.

Sudden Death from Lipoid Pneumonia

The following case seems worthy of record not only because it presents some unusual features in a comparatively rare condition but also because it points a moral.

CASE HISTORY

A patient of mine, a gardener aged 70, died suddenly, and I was instructed by the coroner to make a post-mortem examination. Twenty years previously the man had had a carcinoma of the left side of the tongue, removed by Mr. (now Rear-Admiral) G. Gordon-Taylor. After a preliminary gastrostomy an extensive operation was performed, which included removal of half the tongue, with part of the lower jaw, and a clearance of the lymphatic tissues in the left side of the neck. The gastro-