Summary

The reasons are given why delayed secondary suture of peripheral nerve lesions is likely to prove unsuccessful.

The preliminary results of surgical treatment during the second world war, which are now becoming available, furnish strong evidence in favour of early secondary as opposed to primary nerve suture.

Recent work on nerve grafts is considered.

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ACUTE APPENDICITIS IN THE AGED

BY

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Relatively little has been written about this ubiquitous disease in the aged, yet its manifestations are often so different in patients over 60 that a description is merited. The following points are stressed: (1) The incidence, and the advanced age at which it may occur. (2) The differences in the symptom-complex, and the importance of bearing them in mind. (3) The difficulties in diagnosis and treatment. At any age surgical intervention is well worth while.

Pathology

In acute appendicitis 1 to 2% of all cases occur in patients who are over 60 years of age (Taylor, 1935; Maylard, 1920). The aetiology of the disease is the same as at other ages, but emphasis must be placed on obstructive factors, especially faecoliths. The structure of the organ has altered by the time 60 years have passed. Most of the lymphoid tissue has disappeared and fibrous atrophic changes have occurred, associated with vascular changes, causing impaired circulation and an inability to respond to the demands of inflammation for increased blood supply. Thus the devitalized organ, when subject to obstruction, rapidly succumbs to the onslaught of the infective contents and soon perforates. The omentum and general peritoneum often lack their pristine ability to localize infection, and general peritonitis results. This is withstood poorly, and a fatal termination is common.

The following summary of different series clearly demonstrates the prevalence of serious pathological changes:

	Stalker	Wood
Appendix ruptured	62%	80%
Appendix not ruptured	38%	20%

These figures show that in over two-thirds of the cases the appendix is ruptured.

The mortality is variously reported: Stalker (1940), 16%; Taylor (1935), 20%; Wood (1934), 28%; Fitch (1928), 54%. The commonest causes of death are general peritonitis and

pneumonia, while pulmonary embolism, cardiovascular accidents, cardiac failure, septicaemia, and intestinal obstruction account for a small number. Thus acute appendicitis in the aged rapidly passes to a state of gangrene, followed by perforation and often by general peritonitis, when the localizing powers are too slow or ineffective to allow of abscess formation.

Clinical Aspects

The symptoms and signs differ considerably from the usual pattern in younger patients, but nevertheless there is a fairly well defined syndrome in the aged. Pain is often poorly localized, though nearly always present, and becomes intense only when peritonitis has supervened. In the early stages it is frequently attributed to constipation, which often accompanies or precedes the attack. The taking of aperients, no doubt, adversely affects the issue.

The general reactions of nausea, vomiting, fever, and elevated pulse rate are not found, though a slight fever is recorded in some cases, especially when general peritonitis has supervened. The localizing signs of rigidity, tenderness, and pain on rectal examination are vague and inconclusive, or are absent. Thus in the early stages the patient does not appear ill and shows no signs of the mischief afoot, so that even the wary may be deceived into thinking that constipation is the only complaint. The patient frequently considers this to be the trouble and delays seeking advice. Hence many cases are not seen until peritonitis has developed.

The clinical picture is now dominated by pain and distension, while vomiting and fever are common. Intestinal obstruction is often suspected by the medical attendant, and valuable time may be lost in attempts to locate a growth. When a mass is present this diagnosis receives strong support. (In Wood's series 38% were misdiagnosed before operation as carcinoma or obstruction of the bowel.) Assistance in diagnosis will be found in a white cell count, which is often significantly elevated even in the aged, but it will greatly help if it be remembered that 1 to 2% of all cases of acute appendicitis are found among those over 60.

Treatment

It is manifest that ideals in treatment are difficult to attain when the surgeon is in doubt as to the nature of the condition before operation. If there is a confident diagnosis, a muscle-cutting incision exposing the lateral side of the caecum permits the removal of the appendix with a minimum of interference with the peritoneal cavity. Those cases showing satisfactory ability to localize the condition—i.e., "appendix mass"—are best treated conservatively, provided the symptoms subside under conditions of rest. Close observation in hospital is, of course, essential.

When appendicitis is considered possible, but there is some doubt as to the diagnosis (38% of cases according to Wood), an incision over the right iliac fossa should be made rather than a near midline laparotomy. If the appendix proves innocent, the operation can be concluded promptly by a caecostomy for relief of large-bowel obstruction. Rarely will it be necessary to close the original incision and make a near midline one in search of small-bowel obstruction.

If there is no suspicion of the appendix before operation and a near midline laparotomy has been performed, appendicectomy should be done only when the surgeon is confident of an easy, speedy removal, with a minimum of manipulation of the intestines—e.g., pelvic or ileac position of the appendix and no adhesions. When the general condition is far from satisfactory a drain down to the appendix is wiser. Taylor, in 1935, strongly advocated drainage in all cases, and particularly stressed the dangers of appendicectomy through a near midline incision.

The following case well illustrates most of the above remarks, and it is recorded to emphasize the advanced age at which the condition may be successfully treated.

Case Report

A woman aged 85 was admitted to Kingston County Hospital from a pensioners' home on Aug. 8, 1946. She had been constipated for several days, but made no other complaint until a sudden attack of vomiting the previous evening. Two enemas that night produced neither flatus nor faeces. She continued to vomit greenish-brown offensive fluid, and complained of some vague abdominal pain.

On examination the old lady was very thin and dehydrated, with a dry coated tongue and distended abdomen, especially centrally. She tended to hold the abdomen tight and resented palpation, but no localized pain or mass was detected. Auscultation of the abdomen was inconclusive. Rectal examination was negative, and no herniae were present. All other systems were normal. The temperature was 99.6° F. (37.55° C.), pulse 86, respirations 22. A provisional diagnosis of acute intestinal obstruction was made, and the stomach emptied by a Ryle tube, while an intravenous infusion of saline and plasma was administered. Two further enemas failed to produce a result, and a laparotomy under thiopentone-cyclopropane anaesthesia was made a few hours after admission. A lower right paramedian incision revealed free foul pus in the peritoneum and a sticky exudate covering acutely inflamed dilated loops of bowel. The caecum was collapsed, and a perforated gangrenous appendix was lying in the ileac position, free from adhesions. The appendix was easily delivered and removed. The peritoneum was drained and the abdomen closed.

Post-operative treatment, including intravenous glucose-saline, with sulphadiazine 1 g. 4-hourly and 15,000 units of penicillin 3-hourly, brought about steady improvement, and the patient was discharged to the pensioners' home on the sixteenth day of the illness.

Discussion

Early symptoms were not noticed by the patient, and only when vomiting occurred (due to established peritonitis) was advice sought. The clinical picture strongly suggested intestinal obstruction, which no doubt was present in the nature of an ileus, but the cause was not diagnosed until the abdomen was opened. A white cell count before operation might have aroused sufficient suspicion of acute appendicitis to cause the preferable method of right iliac incision to be used. The remarkably uneventful recovery indicates that even advanced age should not deter the surgeon.

Summary

An account of acute appendicitis in the aged is given. The incidence is 1-2% of all cases of acute appendicitis, and the mortality is about 25-30%.

The pathology is a rapid development of gangrene, perforation, and peritonitis.

Clinical aspects are discussed, stressing the paucity of symptoms and signs in the first few days, and the similarity to acute intestinal obstruction and growth of the bowel in later cases.

The treatment is discussed (1) when there is a confident pre-operative diagnosis; (2) when acute appendicitis is merely suspected; and (3) when acute appendicitis is not diagnosed before operation.

An illustrative case at the advanced age of 85, with survival, is reported.

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The Medical Officer of Health of Willesden, Dr. G. F. Buchan, has presented an interesting review of his 34 years' period of office with that borough. From the days when he toured his district in a horse-drawn carriage ("thereby adding greatly to the enjoyment of life and work") to the present time, every year has seen the extension, and sometimes the pioneering, of public health facilities. Comparing the five years 1907-11 with 1941-5, the death rate fell from 11.1 to 8.3, the infantile mortality rate from 100 to 50, and the maternal mortality rate from 3.8 to 1.7. A ringworm clinic was opened in 1912 and has greatly reduced the incidence of that disease; an eye clinic followed in 1914. Already in that year the falling birth rate was being critically examined from physical, social, and economic aspects. In 1917 a midwife and home-help service began for necessitous mothers confined at home. A scholarship scheme for training sanitary inspectors, the first of its kind, which was started in 1927, is very successful and has been copied by other local authorities. Of the three health centres the first was opened in 1916, the second in 1918, and the third in 1930, attendances rising from 18,089 in 1917 to 255,962 in 1938. Plans for the extension of the health services have been worked out, but they are necessarily tentative because of the priority of housing.

Medical Memoranda

New Albumin Blood Substitutes

Known blood substitutes (salts) do not yield good results when the patient has lost large quantities of blood or is in a condition of traumatic shock. It has long been considered necessary to add a colloidal component to the salt solution of every blood or plasma substitute to give it body when injected into the blood vessels. The manufacture of artificial colloidal media as substitutes for blood is still an urgent problem. The selection is limited by the presence of foreign albumins which are biologically active; the colloidal-albumin component of the blood substitute should therefore possess no anaphylactogenic or primary toxic properties.

In our work at the Blood Transfusion Institute we have made use of a solution for intravenous transfusion which we called "colloidal infusin"; it contains an albumin product obtained from the casein of cows' milk. Casein, of course, has both anaphylactogenic and toxic properties. We set about preparing an albumin product from casein which did not possess these properties and which could be used for internal injection in large quantities. A system of fractionation of natural casein was developed to remove the substances possessing primary toxic and anaphylactogenic properties. Practically, this consists in a special method of denaturation and a weak hydrolysis of the initial natural albumin with extraction by means of an organic diluent.

EXPERIMENTAL

Before recommending colloidal infusin to the clinics as a therapeutic medium for parenteral infusion and injections we studied it on animals. Experiments on the substitution and stimulation aspects of the solution were developed in accordance with the following plan: (1) Biological test for anaphylactogenic and primary toxic properties. (2) Substitution effect on dogs whose blood had been drained in quantities sufficient to cause death. (3) A study of the dynamics of the serum albumins in patients suffering from alimentary dystrophy and treated with frequent injections of colloidal infusin. (4) The effect of non-anaphylactogenic casein on the permeability of the blood vessels in patients suffering from alimentary dystrophy and in experimental animals.

Numerous experiments on rabbits showed the complete absence of toxic properties in colloidal infusin (4% concentration) after a single injection of a large quantity (up to 2 g. per kg. weight with internal application). Subsequent internal injections of this albumin at optimum times for anaphylaxis did not produce any reactive effect in the rabbits. The testing of the solution on guinea-pigs by the classic method of producing anaphylaxis also gave negative results.

CLINICAL APPLICATION

To-day we have behind us the experience of 700 clinical transfusions of colloidal infusin given to patients suffering from various ailments (burns, volvulus, alimentary dystrophy, etc.). In many cases a second injection was given at a period dangerous for anaphylaxis, and no reactions were noted which in any way resembled a state of allergy (rash, Quincke's oedema, and other symptoms).

By using numerous successive injections of colloidal infusin we were able to obtain a rapid increase in the amount of albumin in the serum of patients suffering from alimentary dystrophy, with a corresponding increase in colloid osmotic pressure. The data obtained in experiments on animals and in the treatment of human beings demonstrate the significance of colloidal infusin in combating hypoproteinaemia in various diseases.

We now have considerable data, both clinical and experimental, on the question of the effect of colloidal infusin on the permeability of the epithelium of the capillaries of the patient. The question of the permeability of the capillaries is an important pathogenic factor in the development of many diseases. As a rule an injection of colloidal infusin noticeably lowers the permeability of the capillaries, with a pathogenic increase in permeability during the first hours after the injection. Lower capillary permeability was expressed by a lowering of the liquid filtration figure and—a most important fact—by a cessation in the pathological filtration of albumin.

Colloidal infusin is now used clinically in the following ways: as a plasma substitute in cases of traumatic shock and as a complete blood substitute in cases where there has been considerable loss of blood; as a means of treating hypoproteinaemia of various origins (exhaustion from wounds, deficiency of food,