be allowed to displace our trust in these simple auscultatory signs, which seldom miscarry in the evaluation of this murmur.

Nothing is gained by debating the mechanism of the innocent mitral systolic murmur; for in such a debate, which cannot muster facts and must naturally resort to theories and fancies, lies the danger of allowing this murmur to continue to mystify clinicians. Let us instead adhere to actual clinical findings, and allot to them their proper values in terms of structural changes in the heart as told later by cardioscopy or even necropsy.

The Murmur of "Mitral Incompetence"

As often as we diagnose mitral incompetence, can we prove that the blood regurgitates from the left ventricle into the left auricle during systole? What is the evidence of mitral incompetence when the heart is examined at cardioscopy or necropsy? Certainly when the analogy between this condition and the standard effects of other cardiac abnormalities is considered, enlargement of the left auricle should be a constant finding; but this sign is absent unless some cause other than mitral incompetence is operating, notably mitral stenosis and, less often, prolonged hypertension. The diagnosis of aortic incompetence has a significant meaning because precise signs (clinical, radiological, and pathological) are identified with the lesion. We have no such clear impression of mitral incompetence. It is time, then, to be rid of the term; if preserved it will continue to frustrate the precise diagnosis of heart disease. Instead, when a systolic murmur in the mitral area has not been identified with the irrelevant mitral murmurs in the first group, or the innocent murmur in the second, it should be regarded as standing for mitral stenosis, aortic stenosis, aortic incompetence, or prolonged hypertension; and, less frequently, cardiac aneurysm and cardiac enlargement in heart-block.

The murmur is moderately loud, and is usually best heard with the patient in the reclining posture, although assuming the upright position does not annul it. It is sometimes soft, but as a rule it is roughish or even rough. It is unaffected by respiration, and may become louder when tachycardia is induced.

These clinical states which are common causes of a mitral systolic murmur need only be discussed briefly.

Mitral Stenosis.—Whenever a systolic murmur in the mitral area is considered to indicate mitral disease the term "mitral stenosis" should be used in the diagnosis and not "mitral incompetence." This is in keeping with changes in the heart, for both at cardioscopy and at necropsy the findings are those resulting from the stenotic effect.

It is necessary to assemble other clinical signs to confirm the presence of mitral stenosis in addition to the systolic murmur, which is moderately loud and is best heard in the reclining position, with the patient turning on to the left side after tachycardia has been induced by exercise. A past history of acute rheumatism is small supporting evidence, since not all cases of acute rheumatism develop mitral stenosis and not all cases of mitral stenosis provide a past history of the infection. A thrill in the mitral area is strong evidence of mitral stenosis. A diastolic murmur (always rough) in the position of the third heart sound (mid-diastolic) also stands for mitral stenosis, although it is not an early sign. In fact, when the lesion is young the clinical deduction that a systolic murmur in the mitral area indicates the presence of mitral stenosis may be drawn from finding a significant systolic mitral murmur in the absence of aortic valvular disease, hypertension, and conspicuous cardiac enlargement: cardioscopy should come into regular use here to confirm a well-considered clinical opinion.

In *aortic stenosis* it is unusual to find the mitral area without a systolic murmur. As a rule this murmur is less loud than in the aortic area, but it can be as loud; should it be much louder in the mitral area the added diagnosis of mitral stenosis should be entertained.

A mitral systolic murmur is present in all but early cases of *aortic incompetence*. It should become the custom to expect this murmur in both aortic stenosis and aortic incompetence when there is no need to seek any other explanation of the auscultatory sign.

A systolic mitral murmur is hardly ever absent in *prolonged hypertension* when considerable cardiac enlargement is also a common association. It is not denied that in cases of gross

left ventricular hypertrophy some degree of mitral regurgitation takes place; but the view held here is that this diagnosis alone, devoid as it is of a radiological or pathological pattern, does not usefully add to a precise diagnosis of the cause—namely, hypertension.

Cardiac aneurysm following cardiac infarction, and the enlarged heart associated with some instances of *heart-block*, are two rarer causes of a systolic murmur in the mitral area, but the characteristic ancillary data will readily explain the significance of the auscultatory sign.

Conclusion

So long as auscultatory signs in the heart remain unidentified with characteristic features, so long will they miscarry in diagnosis and frustrate the proper management of patients presenting them. The time is overdue to unify our views on the commonest of them all, the systolic murmur in the mitral area.

TREATMENT OF CHRONIC ULCERATIVE COLITIS BY PNEUMOPERITONEUM

BY

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In many cases of chronic ulcerative colitis conservative medical treatment is ineffective. A considerable number of drugs are usually tried, and patients are kept in bed for months under strict diet and daily irrigations. Some recover after prolonged treatment, others find temporary relief, but there are always cases which seem intractable. Sufferers from this not rare disease frequently belong to the intelligentsia between the ages of 20 and 30, and as even milder forms with 8 or 10 daily bowel motions make them unsociable and unfit for work, drastic therapeutic methods have been employed.

Many writers are in favour of extensive colon resection, and H. W. Cave of New York proposes subtotal colectomy as the method of choice. He believes that the percentage of lasting cures is so small that colectomy is a measure of necessity. On the contrary, we have obtained excellent results in chronic, apparently intractable, cases with a far less drastic and dangerous method—the establishment of a therapeutic pneumoperitoneum and its maintenance over several months. With this measure the patient is not confined to bed except for the first few days, and his sojourn at the hospital can be limited to a short time. Indications for pneumoperitoneum were made on clinical grounds—perchronicity, diarrhoea, pus, mucus, blood in stools, intractability—and little weight was put on bacteriological findings, as various organisms caused clinically indistinguishable forms.

Technique of Pneumoperitoneum

The technique is simple, and can be carried out by any practitioner. The therapeutic pneumoperitoneum may be installed with any model of the usual pneumothorax apparatus and with the same needles as are used for the pneumothorax—the most suitable being fairly thin ones with closed, wedge-shaped, not very pointed end and lateral opening, and a diameter of about 1/25 in. or less. Using such needles, local anaesthesia is not required. The best place to puncture is about an inch to the left of and below the umbilicus. After painting the skin with iodine, and examining the needle for free passage of air, the skin is well stretched between two fingers to give resistance to the needle, which, still in connexion with the manometer of the pneumothorax apparatus, is pushed through skin and abdominal wall. After short practice it is not difficult to distinguish, from the resistance to the needle, the layers of the abdominal wall, and particularly the piercing of the peritoneum. This moment is rather more painful than when the pleura is pierced, but with sufficiently thin needles I have never found it necessary to use novocain, which would make it more difficult to distinguish the abdominal strata. It also seems that the patient soon becomes accustomed to

the pain of the piercing of the peritoneum, and after several refillings it is felt but little.

It is more important than with pneumothorax to feel the strata at the progress of the needle, as of course the manometer gives no indication whether the needle has passed the peritoneum. The danger of piercing the bowels seems very remote: the smooth intestines escape the needle if they are not too tympanitic and if the needle is not too pointed. Also, with the finer needle there would be no danger if the bowels were pierced.

Before passing air through the needle it is advisable to test with a syringe whether blood or any liquid is present. The amount of gas introduced averages 500 c.cm.—oxygen or air being used. The reading at the manometer is round about zero, rising slightly after the filling of each fraction and dropping again quickly, eventually remaining at 2 or 3 cm. H₂O. Sometimes slight oscillations corresponding to the respiration are noticeable. If the needle has not yet reached the peritoneal cavity the manometric pressure of course rises rapidly, even after introducing the smallest amount of gas. The manometer serves in this sense as a control.

Another control is the reduction and the disappearance of the dull liver sound on percussion. During or soon after the filling, the patient usually complains about the sudden appearance of pain in one or both shoulders; this is of so regular occurrence that it is advisable to tell the patient beforehand about it and to reassure him. The appearance of this phenomenon and the projection of pain to the shoulder region are obviously due to the phrenic nerve, and can also be used as a control; the effectiveness of the filling can further be checked by means of radiographs.

Refilling can be done once or twice weekly; when pure oxygen is used the intervals are 3 or 4 days because of more rapid absorption. When air is used the intervals are from 6 to 8 days. Because of its calming effect oxygen is preferable for the first fillings for cases with major abdominal discomfort and frequent colics, and for cases with a higher grade of secondary anaemia and dyspnoea. The number of fillings required varies greatly, and it may be necessary to continue treatment for three months or more.

Results

Of the 7 cases in the series only one was treated for more than 3 months.

Case 1.—A woman aged 28 had been suffering for 3 years from severe diarrhoea. She had from 15 to 25 bowel motions daily—in better periods and under the influence of opium 10 to 12 motions—always with an admixture of mucus and blood, occasionally pus. Loss of weight was 46 lb. in 3 years. During three months' treatment with pneumoperitoneum the number of bowel motions was steadily reduced and she regained 17 lb. Her general condition improved, and finally the stool was free from mucus and blood. The diagnosis of ulcerative colitis had been confirmed by sigmoidoscopy. Investigation after one year showed that she was free from complaints and had further gained in weight.

In one case only two fillings were required. Particulars of this case are as follows:

Case 2.—A man, part Polynesian, aged 42, had been suffering from symptoms of chronic colitis for several years. His loss of weight was over 30 lb. and there was incapacity for work and general debility. After pneumoperitoneum and one refilling he felt well. No sigmoidoscopy had been carried out; the presence of a tumour in the colon suggested by severe secondary anaemia had been excluded by radiological examination. Re-examination after 7 months showed that the patient had gained 14 lb. He was still feeling well and was able to work.

In some cases a moderate amount of peritoneal effusion developed; this liquid was sooner or later reabsorbed spontaneously. In such cases it is advisable to give 10 c.cm. of calcium chloride intravenously 3 times weekly. It appeared also that patients who developed temporary ascites responded more quickly to treatment.

Summary

The therapeutic action of pneumoperitoneum is probably due partly to activating the visceral peritoneum and "tuning it to a higher pitch" by the setting up of a permanent bland

irritation to the vast peritoneal surface, and partly to mechanical action and indirect influence on the autonomic nervous system.

Pneumoperitoneum may be described as a simple and effective therapeutic procedure in apparently intractable cases of chronic ulcerative colitis. It is easily performed, and is free enough from danger for it to be introduced, and for refillings to be made, by any practitioner, even without the facilities of a clinic or a hospital.

SOME OBSERVATIONS ON BILIARY PAIN

BY

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The recent article by Mr. F. R. Brown (1942) in the *Journal* has prompted me to record some clinical observations on biliary pain. The classical "pain" of what is loosely termed biliary colic is really, of course, a pain complex, which has been split into components and explained by Morley (1931). My hope is only to add a very little to what he and others have already said.

Components of the Biliary Pain Complex

I think that in a fully developed case five components of the complex can be recognized, though more commonly only two or three are met with.

1. In most cases of biliary colic the pain is first felt by the patient as a violent if dull ache in the central epigastrium, coming in waves. Like other visceral pains it is absorbing, so that the sufferer for the time being is as if paralysed, and almost identified with his own pain. If he can divert his attention from it for long enough he will pass his hand from side to side across his epigastrium, from one costal margin to the other, to indicate its position, which he still cannot describe with any accuracy. I should be inclined in the case of biliary colic to convert the vertical oval in Fig. 5 of Brown's article to a horizontal one (Fig. 1). In some cases, more

Fig 1

Fig 2

Fig 3

Fig 4

Fig 5

particularly when the attack is short and infection slight or absent (as evidenced by freedom from pyrexia and leucocytosis), this component is the only one felt, and there may be no tenderness over the gall-bladder. I have also been able to observe one of the cases in which an idiosyncrasy to morphine has developed after cholecystectomy, and which Smyth (1941) quotes Walters (1938) as ascribing to spasm of the sphincter of Oddi. In this case the pain provoked by morphine was