recent inquiry, her doctor has informed me that she has been for some time married, and has left the neighbourhood; but he knows that a short time ago she was very well.

CASE XIX.—A manufacturer, aged 26, consulted me in June, 1893, on account of the presence of sugar in his urine. He had lost 9 lbs. in weight during the previous four or five months, but had not suffered from polyuria or thirst. He complained of having had a great deal of worry in his business. I could find nothing wrong in his chest or abdomen, but the urine was specific gravity 1030, and contained 0.75 per cent. of sugar. A few weeks later he had much improved in health, and the sugar had disappeared.

The next instance is a somewhat more complex one.

CASE XX.—A medical practitioner, aged 43, consulted me on November 19th, 1897, for loss of weight and glycosuria. He had been ailing for three years, but before that time had enjoyed fairly good health. During the last four months he had lost 17 lbs. in weight, but there had been no polyuria or thirst. After every meal he said that his body temperature rose slightly. He weighed 10 st. 2 lbs., and the amount of urine in twenty-four hours was 50 ounces. I have no note of the amount of sugar.

I wrote to him a few weeks ago to ask him to report upon his present condition. He tells me that he is now 9 st. 11 lbs. in weight; that his urine is generally from 30 to 35 ounces in twenty-four hours, and never exceeds 50 ounces; that he takes ordinary diet; and that his urine at times contains a trace of sugar. He sent me a specimen of his urine, which was amber, turbid from urates, acid, specific gravity 1018, contained a trace of sugar, and a haze of albumen. He still considers that his temperature is affected occasionally, but I have not been able to get from him any actual figures. He complains of a feeling of fullness in the epigastrium, which he associates with a flow of urine of low specific gravity and loss of weight. He says he is always better when the specific gravity of his urine is from 1020 to 1025, and always worse when it is from 1005 to 1010. He attributes his condition to a neurosis.

SENILE GLYCOSURIA.

The only other special form of glycosuria to which I wish to draw your attention is that which occurs in old people who are suffering from senile decay. This glycosuria is not associated with any of the symptoms of diabetes, but is sufficiently marked to cause a free reduction of copper.

CASE XXI.—An old gentleman, aged 72, consulted me in July, 1889, on account of flatulence, sickness, and failing health. In 1864 he had rheumatic fever, but had enjoyed very good health up to six weeks ago, except that he had always been troubled with indigestion. He had worked very hard at his business, by which he had acquired a large fortune. When I examined him his heart was dilated, but there was no murmur. The pulse was slow and intermittent, and his feet became oedematous towards night. His urine was free from albumen, but contained sugar. He was evidently breaking up, and died not very long afterwards.

CASE XXII.—Another case was an old patient, aged 71, who was sent to me by Dr. Young, whom he had consulted on account of his eyesight. There was a cataract in the left eye, and in the right eye there were striated hæmorrhages round the yellow spot. On examining the urine Dr. Young found sugar. There had been no polyuria, wasting, or thirst, and I found the urine, which was of specific gravity 1018, to contain a moderate amount of sugar; it was free from albumen.

As the glycosuria in these cases must be regarded as a symptom of a general tendency to break down, care must be exercised in ordering strict diabetic diet. From what has been said in the preceding parts of this lecture, it will have been seen that I do not advocate the treatment of these cases of non-diabetic glycosuria by diabetic diet, and where this may have been ordered it has been only for experiment, in order to see what influence it has upon the glycosuria. In these old people it is especially necessary to be cautious, and while there can be no harm in stopping sugar and sweet wines, I should hesitate to deprive them of bread or potatoes, or any farinaceous food they are in the habit of taking.

The purpose of this lecture is not to discuss questions of treatment, for which the time at my disposal is not adequate; but to draw your attention to the conditions other than

diabetes under which we may meet with the occurrence of sugar in the urine, in order that you may be able to estimate correctly the value of this symptom when you encounter it, and to avoid some grave errors of diagnosis and prognosis.

NOTE.

With reference to the occurrence of glycosuria in association with boils and carbuncles (a fact known to and first recorded by Cheselden), it is interesting to note that Professor Lépine, of Lyons, has recently reported to the Société de Biologie (*La Semaine Médicale*, March 7th, 1900) that he has observed in numerous experiments made on dogs that half an hour or an hour after the introduction into the veins of a pure culture of staphylococci a more or less considerable increase of sugar occurs in the blood, which decreases rapidly, and may be followed by an actual reduction below the normal amount.

THE LUMLEIAN LECTURES

ON

SOME CIRRHOSSES OF THE LIVER.

Delivered before the Royal College of Physicians

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LECTURE III.

TREATMENT.

TREATMENT OF CIRRHOSIS.

THE treatment of cirrhosis resolves itself chiefly into an attempt to preserve the *status quo*, as far as the liver is concerned, to prevent the disease advancing, and to relieve any difficulties or imperfections which may arise in the bodily condition, as the result of the hepatic inefficiency. No remedy will remove the fibrous tissue which has choked the liver cells; no drug will restore the cells thus destroyed. The only condition in which the invading agent can be removed to some extent by treatment is in the early stage of syphilitic cirrhosis, when the gummata are not yet organised, and the arteritis and perihepatic inflammation are comparatively recent. For the rest, all that can be done is to attempt to relieve the injured machinery and supplement its powers, so that the crippled organism may survive. When the injury is not extreme this can be done, and the cirrhotic patient hold on to life in fair health and comfort, sometimes for years.

With regard to the first great canon of treatment, the prevention of increase of fibrosis and destruction of liver tissue, absolute abstention from alcohol and all stimulating ingesta is of course the prime necessity. It is as essential in the syphilitic and malarial cases as in those of direct alcoholic origin. There is, however, one reservation to be made. When the last stage of emaciation and exhaustion has been reached, the total privation of alcohol, as we often see in hospital wards, hastens the final collapse. And in the same way, all foods which tax especially the physiological function of the liver, and therefore tend to embarrass and engorge it, such as those rich in fats and sugar, should also be given in reduced quantity, or altogether prohibited. The diet should be restricted to milk, eggs, the simpler proteids, bread, and fresh fruit and vegetables.

It is to be remembered that not only is the passage of nutriment prepared by gastric and intestinal digestion for distribution by the systemic vessels, interfered with by the portal obstruction, but that the glandular structure of the liver is partly destroyed and its physiological function necessarily impaired also. We are too apt, I think, to look upon the question of nutrition in cirrhosis as one of mere difficulty of transport, whereas it is largely one of preparation for absorption and assimilation and of elimination. The secretion of bile, the glycogenic conversion of the carbonaceous elements of food, the mysterious part played by the liver in the metabolism of nitrogenous waste, are all interfered with, and the general nutrition of the body suffers in like degree.

In all cases, therefore, where signs of defective nutrition appear, such as wasting, anæmia, debility, it is well to supplement the work of the digestive machinery by artificial means. Predigested foods, especially pancreatised preparations, or pancreatin in keratin capsules, given with food, are useful aids to the defective liver function.

Further, taking into consideration the embarrassment of the portal circulation and the consequent engorgement of all the viscera, whose venous drain lies through the portal, this condition should be relieved by mild laxatives, such as salts of soda and magnesia. Rhubarb, or cascara, or other unirritating drug of the kind, may be added to quicken the action of the salines if necessary, but anything like hard purging should be avoided. To these laxatives, iron also, or the bitter tonics, as quinine or nux vomica, may be added on occasion.

In the flatulent dyspepsia which so often troubles the cirrhotic patient, full doses of sodium bicarbonate with aromatics, or sodium hyposulphite, or creosote, or carbolic acid, may be given to arrest fermentation.

There are, however, three drugs which more than all others are capable of signal service in appropriate cases: they are mercury, potassium iodide, and digitalis.

Mercury and the iodides, especially the latter, sometimes effect a marvellous change in syphilitic cirrhosis, in virtue of their power in arresting gummatous formation, endarteritis, perihepatitis, and their consequences. The usual rule laid down is that if there is any reason to suppose the affection to be syphilitic, potassium iodide should be given. I would however, urge that these remedies should be given, not only when there is reason to suppose the cause to be syphilitic, but given also steadily in all cases where, by any remote possibility, the syphilitic factor may be concerned. even when the patient is convicted of alcoholism. As I have pointed out, the social connection between syphilisation and alcoholism is naturally a close one; moreover, the syphilitic liver frequently closely imitates the alcoholic liver, and a mistake may be fatal.

In a case recently under my care the liver was studded with gummata, bound down by abundant perihepatitis, and tucked away under the diaphragm, so as to present all the physical signs of a small contracted liver. The patient was a butler. There was no history of syphilis to be made out on minute inquiry. He was a married man with a family of healthy children. Antisyphilitics were given at first; and then unfortunately, under the strong presumption of alcoholism, they were abandoned and the chance of recovery lost.

Digitalis, again, is of material service in those numerous cases in which there is weakness and dilatation of the heart. The enfeebled, dilated state of the heart so commonly present in cirrhosis and the condition of the cardiac muscle found after death explain the often beneficial influence of digitalis and other cardiac tonics.

THE TREATMENT OF ASCITES.

The main interest in the treatment of cirrhosis, however, centres in the ascites. In the majority of cases it is this symptom which betrays the existence of the disease. It is a sign that tension in the portal vein, and its tributaries in the peritoneum, has been raised to the oozing point, or has set up inflammatory effusion; that the flow of nutriment from the alimentary canal into the general circulation is gravely impeded; that the liver function is seriously impaired.

It is not, however, from this point of view alone that the advent of ascites becomes so important. It is rather the mechanical effect of the distension of the abdomen with fluid which is so serious. The diaphragm is pushed upwards so that abdominal respiration almost ceases, and the lungs are imperfectly inflated. Congestion, collapse, and basal bronchitis follow, and not infrequently effusion into the pleura in addition. The heart is pressed upwards and embarrassed, and the impediment to the circulation, already existing in the pulmonary and systemic vessels, thereby greatly increased. The movements of the stomach are hampered, and the circulation in that organ, so vital to digestion, already interfered with by the portal blockage, is made still more difficult. In the same way the spleen, the pancreas, the intestines, the liver itself, all suffer from the pressure of fluid upon them, and upon the vessels of the portal system, and the vicarious flow through venæ communicantes is interfered with in like manner. The kidneys, indeed, which do not discharge into the portal system, are not directly affected by the venous block there. The renal veins are, however, affected by the pressure of the effusion into the abdominal cavity, and the congestion of the kidneys which arises in extreme ascites affords significant evidence of the disastrous effect of this simple mechanical pressure. The urine becomes scanty, high coloured, albuminous, and sometimes contains casts. There ensues, in fact, a nephritis, dis-

turbance of the renal function; a uræmia, adding systemic poisoning to the other disorders.

Although there may be difference of opinion as to the course to be pursued in order to remove the fluid, and to relieve this general oppression of the vital organs, there can be none, I think, as to the necessity for doing so by some means or other. The only question is when and how it should be done.

There is no more painful clinical picture of hopeless disease and helpless therapeutics than these cases of ascites left unrelieved in their increasing exhaustion and distress. The question is not one of mere relief of distress, however; it is one of releasing the embarrassed vital organs from fatal pressure; of improving the general pathological condition, and making temporary recovery possible; for, as I have shown, ascites does not arise in the last hopeless stages of atrophic cirrhosis only, but now and again appears earlier, when more than mere temporary relief may be hoped for. The practice adopted for this purpose of old was to attempt to carry off the fluid by hydragogue purgatives and by diuretics.

Purgatives.—With regard to the former, it may be affirmed without hesitation that hard purging is in these cases a pernicious and fatal practice. It is in most instances absolutely ineffectual as a means of reducing the dropsy; it is most effectual in reducing the strength and nutrition of the cirrhotic patient, already enfeebled by the difficulty of drawing a minimum of aliment through the obstructed vessels. This difficulty is increased by purgation. The nutrient fluid is hurried through the alimentary canal too rapidly for absorption. The flow is set outwards instead of inwards. The plan of giving the purgative in the early morning before food is taken mitigates but does not neutralise the ill-effects, a large amount of nutrient material remaining from previous meals is drained away. Further, this favours the onset of diarrhoea, which is only too apt to set in spontaneously, is most difficult to control, and of evil augury. The expression "purged to death" is not infrequently sadly appropriate to the records of cirrhotic ascites. Therefore, although a few sharp purges may be useful at the outset, when the patient is comparatively robust, free purging is a fatal device when the patient is enfeebled, and in any case is to be deprecated as a continued treatment.

Diuretics.—It may be said that where the kidneys are sound diuretics are harmless, where diseased, injurious. They are, however, constantly futile. Cases are indeed recorded where the action of diuretics is credited with the cure of abdominal dropsy. I have tried them all, and, as a means of removing the copious effusions of hepatic ascites, with entire want of success. As a matter of fact in this condition, as Murchison pointed out, "diuretics are of little avail." The pressure on the renal veins so interferes with the circulation through the kidneys that diuresis becomes impossible. It has been found that whilst the most powerful diuretics have failed to excite the flow of urine in ascites, the removal of fluid by paracentesis is often followed by a copious flow even without the aid of diuretics.

Restriction of Fluids.—In a paper published more than twenty years ago,¹ I discussed the treatment of dropsy of various forms on the plan of restricting the inflow of fluid by restricting the drink of the patient, thus compelling the body, by limiting the intake, to reappropriate some of the outflow, and thus favouring absorption of effusions. I found that in cases of renal dropsy it was unquestionably injurious, lessening the flow of urinary excretion—in cases of cardiac dropsy of doubtful service—but in hepatic ascites usually well borne, and of some value as an adjunct to other treatment. In a recent article on Dropsy, Dr. Dickinson² cites two cases of hepatic ascites in which this method proved successful.

Paracentesis.

The only reliable plan of removing the abdominal fluid, however, is to draw it off by mechanical means. The postponement of the operation until the vital machinery is seriously embarrassed is, I am convinced, a fatal error. Why should we persist in exhausting our debilitated patient in the vain attempt to remove fluid by drugs, through the round-about channel of bowel and kidney? and whilst we waste time in these futile endeavours, allow the vital organs to become

more and more engorged and injured, when the fluid can be withdrawn directly and more effectually by the simple agency of a Southey's trocar. The good effected is great, the risk in these days of antiseptic surgery of the smallest.

I presume that the main reason for the tardy adoption of earlier paracentesis lies in the fear of septic peritonitis; and the fact that the weight of authority has been overwhelmingly against it except as a last resource—Sir Thomas Watson, Niemeyer, Thierfelder, Aitken, Bristowe, chiefly on the ground that it was useful only for the relief of suffering; Frerichs objected to it on the ground that the counter-pressure of the ascitic fluid upon the peritoneal vessels lessened the rapidity of effusion. Murchison objected on account of the loss of albumen involved. Murchison and Bristowe, however, modified their views at a later period, and sanctioned paracentesis before an extreme stage was reached.

I have known only four instances in which paracentesis proved fatal from resultant peritonitis. Two were in the period before antiseptic precautions were observed; the third was due to accidental displacement and infection of the drainage tube; the remaining one was unexplained. It is true that when the operation is postponed until the patient is in the last stage of cachexia and exhaustion, tapping sometimes hastens the final failure; but I have never seen this in the earlier stages before the general health has been gravely impaired.

As a matter of curious interest, I may say I have recently had under my care at St. Mary's a man aged 49, who (as a child) was tapped for ascites in St. George's Hospital, I think by Mr. Cæsar Hawkins, forty years ago.

The first physician to insist upon the advisability of tapping early was, I think, Dr. Austin Flint, in America, as long ago as 1863. Writing in 1883³ he says:

In concluding my clinical report on ascites twenty years ago, I used the following language: "Unpromising as are the majority of cases of ascites, I cannot but believe that, as regards prolongation of life, and as much improvement as is compatible with existing structural disease, the success of medical practice would be enhanced by employing less than has been the custom, diuretics, hydrogogue cathartics, and depressing remedies, and by resorting earlier than is usually done to tapping. After the added experience of twenty years, I hold to the same belief with a strong conviction of its correctness, as based on reason and clinical facts."

He gives to cases showing favourable results in support of this opinion. In 1872 Dr. Frederick Roberts⁴ advocated repeated tapping, and also gave a series of cases as evidence of its success. In 1873 Dr. McCrew,⁵ and in 1881 Dr. Duncan,⁶ expressed similar conclusions.

When I ventured to urge the employment of early and repeated paracentesis in hepatic ascites, in a discussion on the subject at the meeting of the British Medical Association in Nottingham eight years ago, opinion upon the subject proved to be still much divided. At that time all the textbooks of medicine, as far as I know, with a solitary exception, agreed in repeating without question the old stereotyped rule that the operation should be postponed as long as possible. Now, however, this view has been modified, in so far that paracentesis is sanctioned by most authorities when the pressure of the fluid is obviously causing embarrassment of the viscera.

As a matter of my personal experience, in every instance of well-marked hepatic ascites which has done well early and repeated paracentesis has formed an essential part of treatment. Before this was adopted, the results—in my practice, at all events—presented one long, uniform list of melancholy failures; and in the vast majority of cases of hepatic ascites recorded, where the condition has been successfully treated by others, repeated paracentesis has also formed a main feature of treatment.

In the least favourable form of atrophic cirrhosis even, where the good effected is only transitory and nothing can reasonably be hoped for beyond a respite of a few months, paracentesis is beneficial if not left too late. The early removal of the ascitic fluid enables the patient to live longer in comparative comfort, instead of suffering a shortened life in hopeless unmitigated distress.

In discussing the question of viability and prognosis in the preceding lecture I instanced a number of cases which support this view. In most of those which proved fatal the correctness of diagnosis was proved by *post-mortem* examination afterwards. The only explanation

of the less favourable results attained by some others which I can offer is that possibly the operation was postponed to too advanced a stage of the disease, or not systematically repeated at proper intervals and the case retained under close observation and treatment throughout. Tapping in the very last stage of cirrhosis frequently hastens death; and a single paracentesis without repetition, or repeated only too late when symptoms again become urgent, is of little service. In the successful cases I have to record the patients were retained in hospital or under constant medical care in private until fluid ceased to return and health was fairly restored. "Tap and turn out" is a most unsatisfactory practice, futile and delusive.

The removal of fluid by continuous drainage has been practised with some success by Dr. Cuillé and Dr. Elliot in America, and by Dr. Urso in Italy. In some cases of mine where the puncture of paracentesis has remained open the results have been satisfactory, except for the manifest discomfort involved. A more drastic plan of promoting adhesions of the liver and spleen to the parietes by surgical operation has been advocated, with the idea of aiding the development of new vascular channels. It seems at first sight somewhat like the partial closure of a safety valve, preventing automatic easing of the portal vascular distress. Nature's operations in this direction of adhesions in cirrhosis are not apparently very favourable, and associated with the most intractable cases; they do not suggest an imitation of her methods.

The course of these cases of cirrhosis which have resulted in restoration to health for lengthened periods—cases in which the return to health has been such as to warrant the term "recovery"—is most satisfactorily illustrated, perhaps, by a brief description of some of the most remarkable amongst them.

The first was that of a patient sent into St. Mary's Hospital in October, 1883, as suffering from Bright's disease. He was a man of 30, of great stature and fine build, slightly jaundiced, and he had lost a good deal of flesh. The ascites was extreme, the legs below the knee oedematous, but there was no general dropsy. The liver was greatly enlarged and hard, reaching half way to the umbilicus, the heart displaced upwards, but the sounds normal, the lungs clear. The urine contained one-sixth albumen and both hyaline and granular casts, but no blood.

The patient was a carman, and confessed to taking 7 to 8 pints of beer a day with half a quartern of rum before breakfast and he suffered from morning diarrhoea. The case was regarded as one of alcoholic cirrhosis, and treated in orthodox fashion by cathartics and diuretics and tonics, paracentesis being postponed until urgent symptoms might arise. The man got steadily worse, the lungs became engorged, distension extreme, dyspnoea and distress great. Then, *secundum artem*, a paracentesis was performed as a mere matter of relief, 400 ounces being drawn off. The patient slept well that night for the first time for many weeks.

At this juncture the patient complained of sore throat and a small ulcer was observed on the soft palate. It was then remembered that he had had both testicles removed, one for "strumous disease" five years before and the second eighteen months ago for "tuberculous affection." On further inquiry, it was ascertained that he had suffered from venereal disease fifteen years ago, and chancre scars were visible. Although the condition of the liver itself was not suggestive of syphilis, it was recognised that even surgeons were human and might be fallible, and that probably the affection of the testicles was syphilitic not tuberculous. Potassium iodide was accordingly given in doses of 10 grains three times a day. This was not followed by any improvement, and in three weeks the man had fallen back into his former condition of extreme distension and urgent distress.

Paracentesis was again performed and the iodide continued. From this time improvement set in and was continuous. Albumen disappeared from the urine; appetite returned. Tapping was repeated four times more. The intervals between theappings grew longer, the amount of fluid withdrawn less, and after the sixth operation returned no more. The patient was finally discharged seven months after admission, to all appearance strong and hale, without a trace of renal or cardiac disease. The liver, however, remained large and hard as before. The man came to hospital for examination a year and a half afterwards; he had remained well and robust, had walked ten miles with his horses the day previous. The liver was enlarged and hard as before.

This case was especially interesting to me because up to this time I had never seen one of recovery from hepatic ascites, when the dropsy, emaciation, and exhaustion had progressed to such an extent as in this instance. In all previous cases, in spite of treatment, and I am afraid too often in consequence of treatment, the patients invariably went from bad to worse. In one or two cases I had seen ascites disappear, but never the patient get well.

The relief afforded to the oppressed organs by the removal of the ascitic fluid, the absence of any material progress under potassium iodide, until the general deadlock was relieved by a second tapping, followed by repetition, before serious visceral engorgement recurred, compelled the opinion

that blind following of the routine practice of postponing mechanical relief as late as possible was a mistake, and that not only were the patients' sufferings thus needlessly aggravated, but their chance of life seriously endangered or destroyed. Subsequent experience has amply confirmed this judgment. The absence of improvement under iodide at first, and the favourable effect of tapping, leave it uncertain how far alcohol and how far syphilis were factors in the case; probably both played a part.

The next case is adduced as an example of the marked syphilis of which I have spoken. It is that of a woman, aged 40, with enormous ascites, the abdomen measuring 43½ inches; thin, emaciated, not cachectic, and not jaundiced. The liver was just felt below the margin of the ribs after tapping. The body had begun to swell nearly two years before, and she had already been tapped five times. She had had much pain in back and side, and five months ago her legs began to swell. There was no sign of heart or renal disease. There was no history of alcoholism, and the woman had not the appearance of a drinker. There was no history of syphilis nor sign of it. The patient was a married woman with one healthy child, and had had no miscarriages.

Physical examination showed that the dropsy was not ovarian, and that there was no matting of intestines or omentum suggestive of tuberculosis. Alcoholism, heart disease, peritonitis due to kidney disease, or tuberculosis seemed all precluded, and it was judged to be most probable that the affection was syphilitic cirrhosis with perihepatitis, a condition so often neither indicated by history nor betrayed by physical evidence.

This diagnosis was strongly confirmed by the subsequent progress of the case. Pleurisy, pericardial friction, slight hæmoptysis, suggested the presence of gummata in the lung—a condition found to exist in another case of syphilitic cirrhosis. She was treated by potassium iodide, tapped three times more, and discharged four months after admission, plump and well, free from all signs of cardiac, pulmonary, or renal disease; the urine, specific gravity 1022, free from albumen or casts.

Five months later she came back for examination, and was found to all appearance in robust health, without sign of any dropsy, kidney disease, or heart disease, the liver being felt as before, just below the ribs.

The next case was that of a woman aged 46, admitted to St. Mary's Hospital in 1885 for malignant disease of the liver, great ascites, and marked jaundice, which had lasted for six months, and rapid loss of flesh. The liver was greatly enlarged, hard, and somewhat uneven of surface, and it was tender. She was tapped and given potassium iodide, and went out apparently well; she came in again the following year, was treated in like manner, and again went out in good general health.

Two years later she was admitted for the third time, was again treated by paracentesis and iodide, and went out well.

She remained under observation and free from ascites for five years more, when she had an attack of hæmatemesis; a year later the hæmatemesis returned, from which and intercurrent erysipelas she died. No *post-mortem* examination could be obtained, but the liver remained greatly enlarged and hard to the last.

The next case which I have to bring forward is one in which the affection was purely alcoholic in origin.

The patient, a publican, whom I saw in consultation on November 5th, 1890, was a tall, powerfully-built man; he had lost flesh, but was still somewhat stout, and not cachectic in appearance. His abdomen was distended with fluid, measuring 40 inches in circumference at the umbilicus. The superficial veins were full and conspicuous. The liver was greatly enlarged, the edge reaching to within 3 inches of the umbilicus, its surface smooth, very hard, and slightly tender; the legs were cedematous. The heart was not appreciably enlarged, the sounds regular and free from murmur. The lungs were normal, except for some bubbling *râles* at both bases. The urine was scanty, high coloured, and contained one-fourth albumen. No casts or blood could be found on microscopic examination.

The account given by the patient was that he had noticed his abdomen steadily increasing in size for about six months; his legs had only begun to swell during the last fortnight. He had never had rheumatic fever, or any other serious illness. He had never had syphilis, nor was there anything suggestive of it. He attributed his illness to working in a damp cellar; and the cellar was no doubt a factor. He acknowledged to drinking enormous quantities of beer daily, spirits only on occasion.

It was agreed that paracentesis should be performed, and repeated as required. This plan was duly carried out. The distension usually returned again, so as to cause discomfort in two to three weeks. Paracentesis was performed nineteen times between November and the following July, a period of upwards of eight months, amounts varying from 580 to 220 ounces being withdrawn. Iodide of potassium was given for some weeks as a measure of precaution, but without good effect, and it was abandoned, and grey powder substituted for a time. No drastic purges were given, the bowels being simply regulated by a mineral water. The albumen rapidly disappeared from the urine, after the first tapping, returning fitfully from time to time for short periods with the increased pressure of reaccumulating fluid. The urine remained scanty—about 20 ounces only.

Shortly after the eighteenth tapping, however, the patient, who had previously been lying on his back on bed and couch, got up and took a short drive and walk to record his vote at an election. On his return home, *post hoc* or *propter hoc*, diuresis set in, and continued for some days to the amount of 100 to 120 ounces in the twenty-four hours. The fluid in the abdomen did not altogether disappear, and a nineteenth and last tapping was performed, after which there was no return of the ascites. The man's health continued to improve, and when he called upon me a year after my first visit to him he was apparently hearty and well, except that the liver was large and hard as before. There was no sign of heart disease; the urine was normal. He was able to resume an active life; he had remained a rigid abstainer.

From that time I lost sight of him, but his regular medical attendant, to whom I am indebted for most of the details of the case, tells me that

the patient remained well, leading an active life, until about two years ago, a period of eight years in all, when he fell a victim to influenza pneumonia. From the commencement of the first illness until his death he had entirely abstained from alcohol.

The next example of hypertrophic cirrhosis of purely alcoholic origin with extreme ascites is, perhaps, the most satisfactory of all, since the subject survives to this day—nearly twelve years after first coming under treatment:

In this instance the patient was a married woman of 32, admitted into St. Mary's Hospital for jaundice and ascites in May, 1888. She acknowledged to being a heavy drinker—of spirits chiefly—and on one occasion gave material evidence of it by coming to the hospital in a state of riotous intoxication. There was no history of syphilis or suspicion of it.

The woman was fairly nourished, not thin or cachectic, although she stated that she had lost much flesh. Her face was covered with acne rosacea and venous stigmata, and she was jaundiced. The abdomen was greatly distended. The superficial veins were full and tortuous; the liver was enlarged, reaching 4 inches below the ribs, extremely hard, smooth, or slightly granular. The heart sounds were normal, the urine free from albumen. There was some cedema of the ankles.

The patient was tapped seven times in the course of the five months for which she remained in hospital, large quantities of fluid being drawn off. Potassium iodide was given for a few weeks, but discontinued since no improvement followed, and iron and digitalis substituted. After the seventh tapping the dropsy did not return, and the woman went out at the end of five months apparently well, and so remained for five years.

She, however, took to drink again, and was admitted for the second time in October, 1893, in a condition of enormous ascites. The abdomen measured 50½ inches, the liver was large and hard as before, distinctly felt 7½ inches below the costal margin as far as the umbilicus, the hepatic dullness commencing above the sixth rib. The heart was normal; the urine free from albumen. She was tapped twice—386 ounces—and treated by potassium iodide for a short time, and then by diuretics. The latter failed to promote diuresis even after tapping. The ascites did not return, and she went out well in January, 1894, three months after admission.

She was admitted for the third time in 1895, tapped several times, and then discharged well.

She was admitted for a fourth time in December, 1896, and again went out relieved by tapping.

She was admitted for the fifth time in December, 1897, tapped and relieved, but on account of the enormously extended flaccid abdomen all the fluid could not be removed. She was supplied with an abdominal belt, and directed to return.

She failed to reappear; but was sought out and induced to come into hospital again in December, 1899, to complete the cure of her ascites, and this further tapping has been successfully done. She had remained in good health since her last visit two years ago. The following is her condition as ascertained two months ago, before the last paracentesis:

The patient looks fat and well except for some marking of the skin of the face from dilated vessels. The abdomen is very large, flaccid, and pendulous from previous distension, and measured 43 inches. It contains a considerable amount of fluid, which the patient says has remained since the last incomplete tapping two years ago. The liver is large and very hard with a sharp edge 6 inches below the ribs; it is therefore somewhat smaller than it was two years ago. The spleen is not enlarged; the superficial veins of the abdomen are conspicuous but not distended. There is no cedema of the ankles, the heart is not enlarged, there are no *bruits*, the sound and action normal. The urine is acid lithatic, specific gravity 1027, free from albumen and casts. The faeces are normal in appearance, and show a good amount of biliary colouring.

The permanence of the liver enlargement in this case, the preservation of nutrition, the absence of all signs of renal disease or of heart disease are notable. The case remains as an example of hypertrophic cirrhosis, due to alcohol, uncomplicated by any other disorder, the patient surviving in fair health up to the present time, twelve years since cirrhosis and ascites were recognised.

I may quote another example of alcoholic hypertrophic cirrhosis with ascites, which has for two years past followed a favourable course.

The patient, a gentleman of 47, was referred to me as suffering from Bright's disease and ascites. He was a broad-set, burly man, full fleshed, his face turgid, and he had some dyspnoea. The abdomen was highly distended with fluid, the veins of the surface being swollen and conspicuous. The liver was of great size, with flat, hard, woodlike surface, and sharp unyielding edge, extending 4 inches below the margin of the ribs; the legs and thighs were cedematous, but there was no general anasarca, cedema of loins, or puffiness of face. The heart was somewhat enlarged, the apex beat just outside the nipple line, and the area of cardiac dullness increased laterally to the right margin of the sternum. Its action was quiet and regular, the first sound somewhat short, the impulse not increased. A mitral *bruit* could be heard just over the apex. The pulse was 80, soft, regular, and of rather low tension. The lungs were clear except for slight basic catarrh. The urine was diminished in quantity, high coloured, and very acid, specific gravity 1024, contained albumen estimated at 1/5. Careful microscopic examination revealed neither blood nor casts.

The patient had indulged in alcohol habitually to great excess up to the commencement of his illness, having, as he told me, taken sometimes as many as twenty-four glasses of whisky and soda or more in a day. For the last eighteen months, however, he had been a total abstainer. There was no history or sign of syphilis.

The condition was clearly hepatic ascites, due to alcoholic cirrhosis, with some dilatation of the heart and renal congestion dependent upon the cardiac and hepatic lesions. In view of the great abdominal pressure and distress I advised that paracentesis should be performed without

delay. This was carried out by his medical attendant in the country, and 300 ounces drawn off. The leakage continued for some time afterwards. Saline laxatives and digitalis were given internally.

The effect of the removal of the fluid was remarkable. When I next saw the patient four weeks afterwards, the abdomen was lax but still contained some fluid, the liver hard and large as before, reaching to within 1 inch of the umbilicus. The oedema of the legs had almost gone. The area of heart dulness reached to midsternum. The urine was free from albumen, of specific gravity 1021. He was already so active and free from dyspnoea, and so well, that he had been walking about the streets, and paid a visit to the Admiralty on business. His appetite was excellent, indeed exceptional, and he expressed himself as feeling perfectly well but for his remaining ascites.

To sum up, he was subsequently tapped four times more, the last time in August, 1899. Since then the ascites has not returned, and the medical man under whose care he has been reports in January of this year that he remains well in all respects, the enlargement of the liver, and the slight, local, mitral *bruit*, being the only marks of disorder.

Such is the course of the case since it came under my personal observation.

The previous history, for which I am indebted to the kindness of the medical men under whose care the patient came earlier, is of great interest, since it throws light upon the relation of the cardiac, hepatic, and renal disorders to the present condition of a more simple, hepatic ascites.

In November, 1897, a little more than a year before I first saw him, the patient came under the care of his medical adviser in the country in a critical condition; great ascites, anasarca, albuminous urine, irregular pulse, feeble failing heart. He was tapped, and given digitalis, and he shortly recovered sufficiently to resume his duties away. He quickly broke down again, however, and in August, 1898, came under the care of the eminent practitioner who has kindly sent me the following account of his condition at this juncture:

"There was a history of kidney disease, enormous anasarca, and ascites. The heart was greatly dilated with a mitral *bruit*, irregularity of action, reduplication of first sound, and venous pulsation; there were marked symptoms of uræmia. The urine had a specific gravity of 1024, was highly albuminous, containing oily and epithelial casts. The liver was greatly enlarged. He was tapped nine times to the extent of 18 gallons and 3 pints, between August, 1898, and January, 1899. Various drugs were given: digitalis was ill borne; but strophanthus, strychnine, and salines were distinctly beneficial."

It seems clear that in the first instance there was great cardiac dilatation and a congestive nephritis, in addition to the cirrhosis and engorgement of the liver, the cardiac dilatation being due to the enfeeblement of the cardiac wall from alcoholism. The enlargement of the liver was due partly to alcoholic fibrosis, partly to engorgement from the heart state; whilst alcoholic irritation, cardiac inability, and ascitic pressure were probably factors all engaged in the production of the congestive nephritis. With rest, abstention from alcohol, cardiac tonics, and the removal of fluid pressure, all the disorders dependent solely upon temporary and removable conditions subsided, the heart contracted, the nephritis ceased, the general dropsy disappeared. The condition of the liver, however, depending not only upon venous engorgement, but upon fibrosis also, could not be so remedied. The cirrhosis remained, and the ascites returned from time to time, until the development of vicarious circulation and the increased cardiac vigour eased the portal circulation.

That the course of events ran closely on these lines is shown, I think, by the immediate and great relief afforded by paracentesis, evidenced by the cessation of dyspnoea, rapid subsidence of oedema of the legs, disappearance of albumen from the urine, and all signs of renal disorder. The dropsy in the last stage was not a general dropsy, due to cardiac and renal disease, but a hepatic ascites.

The course of the disease in the preceding case suggests that cardiac inefficiency is sometimes an important agent in determining the occurrence of portal dropsy in cirrhosis. I have now under my care at St. Mary's a man with extensive mitral disease and secondary tricuspid disease, and an enormously enlarged pulsating liver, who has very extensive ascites but hardly any general dropsy.

In speaking of the intercurrent ascites of mitral disease of the heart in the first lecture, I suggested that it might be due to the engorged condition of the liver, *plus* the moderate cirrhosis which follows on prolonged venous hyperæmia. The addition of systemic obstruction to that of the fibrosis and capillary dilatation, thus causing greater intravascular pressure in the portal veins than in the systemic, determines transudation in the portal area—a portal dropsy only, not a general systemic dropsy. Evidence was adduced from morbid anatomy proving how gravely the muscular structure of the heart is often affected by degenerative changes in cirrhosis.

It is, I think, probable that in these cases of hypertrophic

affection, when ascites supervenes earlier than the fibrosis of the liver alone seems to warrant, the increased portal stagnation induced by heart dilatation and inefficiency, added to the cirrhotic obstruction, may be the last straw, the determining factor of peritoneal effusion. Two other cases which have come under my observation lend support to this view.

In 1894 I was asked to see a young man, aged 32, in wealthy circumstances, said to be suffering from Bright's disease, with the statement from his medical attendant in the country that he had been a confirmed and excessive spirit drinker since he was 12 years old. He told me indeed himself, with great pride in his own acuteness, that the waiters at the club where he stayed in London had orders to make all his glasses of brandy double ones.

When I saw him he was breathless on movement, in great distress from dyspnoea, and had extreme anasarca of the lower half of his body, with marked ascites. The heart was greatly dilated; there were mitral and pulmonary murmurs, and moist sounds at the base of both lungs. The liver was greatly enlarged and hard, its edge reaching three fingers' breadths below the ribs in the nipple line. The urine was high coloured, and of specific gravity 1032, loaded with albumen, and contained abundant granular and hyaline epithelial casts.

Under absolute rest, digitalis, absence of alcohol, and the care of a doctor and two nurses, he quickly recovered; and two months later astonished me by walking briskly into my room, expressing himself as well, and looking well. The dropsy had gone, the cardiac murmurs had gone, although there was still evidence of dilatation. The casts had disappeared from the urine, which had specific gravity 1022, a mere trace of albumen alone remaining. The liver remained enlarged as before. The alcoholic habits were renewed after a time, and a year later the liver had enlarged still further and become enormous, reaching halfway to the umbilicus; the heart was larger than normal, with short first sound, but no murmurs.

There was no return of dropsy. The next stage, which I anticipated would speedily ensue—namely, ascites—did not follow. The patient died suddenly of syncope a few months later.

In this case the same series of events followed as in the preceding case with one exception—cardiac degeneration, general dropsy with disproportionate ascites, progressive fibrosis; the final stage of cirrhotic ascites alone was wanting.

The second case is one I have already mentioned as an instance of alcoholic enlargement of the liver in a young fellow of 29 years of age. He has some dilatation of the heart, palpitation, dyspnoea, considerable enlargement of the liver, but no dropsy. This exhibits the earliest stage of hepatic engorgement and commencing fibrosis. Can there be much doubt that if the exciting cause continues in operation the stages observed in the other more advanced conditions will follow in due course?

If cardiac debility and dilatation play an important part in the production of an early ascites in certain cases of hypertrophic cirrhosis, it will help to explain why these cases run a more favourable course than others. It is a condition which can be materially influenced by treatment; a condition capable of great relief if not of cure; and its removal makes more easy and possible the removal of the ascites, which may finally disappear, as it does in the analogous condition of the ascites of mitral dropsy.

There is another point connected with this relation of cardiac inability and hepatic stagnation which deserves consideration. Is it not possible that this may explain not only why in these cases of hypertrophic cirrhosis the liver remains large, but also why the fibrosis affects partly the finer branches of the interstitial tree, instead of the large trunks only as usual in atrophic cirrhosis? The character of the fibrosis is certainly not determined by the nature of the alcoholic stimulant, as has been suggested—according as it is beer or spirits.

In three of the four cases related the patients were spirit drinkers, one only a beer drinker. The enlargement, moreover, is not due to fatty deposit. My observations agree with those of Dr. Foxwell⁷ that fatty infiltration is no more common in the large than in the small livers.

The enlargement is probably due in part to chronic venous engorgement and dilatation of hepatic venules and capillaries—such as is found in the nutmeg liver of cardiac cirrhosis. If the specimen of pure cardiac cirrhosis is examined and compared with that of alcoholic hypertrophic cirrhosis, it will be seen that the two conditions are almost absolutely identical. There is the same mixed coarse and fine fibrosis, the same appearance of fresh formation of biliary ducts—the same enlargement.

Moreover, it might well be that in alcoholic cirrhosis with early enfeebled heart the effect of the alcoholic poison would be felt where the blood stream is most delayed, as the region of the hepatic vein in the lobule is approached, producing a

fine fibrosis there; and that this region would escape in an alcoholic cirrhosis, where the heart factor did not come in, and a simple coarse cirrhosis only with atrophy in that case result.

Be this how it may, however, I believe that cardiac inefficiency, even when not advanced enough to disclose itself by the usual physical signs of heart disease or a general dropsy, is a factor in the causation of the more acute cirrhosis of the enlarged alcoholic liver, and of the ascites which may accompany it.

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ON DIPHTHERIAL STOMATITIS.*

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By diphtherial stomatitis is here understood a stomatitis produced by the diphtheria bacillus associated or not with other microbes. The term does not include cases in which the membrane or exudation is present on the uvula and adjacent soft palate, for this localisation of the lesion is included under faucial diphtheria and is not uncommon, although in such cases the tonsils are mostly also implicated. Diphtherial stomatitis is therefore restricted to cases in which the characteristic lesion is situated on the inner side of the lips or cheeks, the floor of the mouth, tongue, or hard palate. It may be either primary or secondary, according as the membrane or exudation appears first in these situations or follows upon a faucial diphtheria. The following are instances of primary diphtherial stomatitis:

CASE I.—A man, aged 35, had been ill for some five or six days with soreness of the mouth and gums, and fever of the breath, but there was no change from the normal in the temperature, pulse, or respiration. Two elongated patches of membranous exudation appeared on the under surface of the tongue parallel to the frenum. The tongue was not swollen. It was thought at first by Dr. Hawtin, who was in attendance, that the case might be one of mercurial stomatitis, but the patient had not taken any mercury, nor was there any evidence of syphilis. In addition to the appearances above named, there was also a patch of membrane on the inner side of the lower lip when I saw him a few days later. The patches were made up of a thick dirty-white looking membrane and a bleeding surface was left when the membrane was stripped off. The glands under the jaws were slightly enlarged. The patient was treated with disinfectant mouth washes. A bacteriological examination was made of the membrane, and a short bacillus obtained from it having the morphological appearances of the short diphtheria bacillus. It stained unevenly, often presenting a lighter centre with a constriction opposite this centre. It gave Neisser's reaction. The individual bacilli were often arranged in parallel fashion. As very little change was noticed in the mouth during the next few days, 2,000 units of antidiphtherial serum were injected. In a day or so the patches of membrane gradually became less and eventually disappeared, so that the patient was well in a week.

There were one or two difficulties in this case. As regards the bacteriological examination, it might be urged that the bacillus found was the so-called pseudo-bacillus. The short diphtheria bacillus is admittedly much more apt to give rise to doubt as regards its identity than the long segmented form. To those who recognise the pseudo-bacillus as such, the distinctions between it and the short diphtheria bacillus are based on several features, but more particularly on its non-pathogenic properties. Unfortunately no experiments were made upon this point in my case. As mentioned above, the micro-organism gave Neisser's reaction, but all are not by any means prepared to look upon this reaction as distinctive of the diphtheria bacillus. To sum up, in the above-named case a bacillus was found morphologically indistinguishable from the short diphtheria bacillus, and this microbe was obtained from a lesion bearing all the appearances of diphtherial membrane. Under these circumstances, I think it right to conclude that the micro-organism was the bacillus of diphtheria.

The clinical difficulty consisted in the absence of general symptoms. Nevertheless, cases of unquestionable diphtheria are occasionally seen where there is a more or less complete absence of general symptoms. There are also well-authenticated cases of membranous rhinitis due to the diphtheria bacillus where there have been absolutely no other symptoms

than the slight local ones. From some such cases true faucial diphtheria has been known to arise in other members of the household. This absence of symptoms has been mentioned by some writers on diphtherial stomatitis (Forchheimer,¹ Goodall,² and others). The first-named observer says that diphtheria of the mouth, when primary, may run its course insidiously, and is overlooked or is not recognised until further complications develop. The absence of general symptoms cannot therefore be looked upon as excluding diphtheria.

CASE II.—A girl, aged 15, was suffering from what Dr. Shaw, her medical attendant, thought was an ulcerative stomatitis. A swab was forwarded to the laboratory of the Leeds Medical School. The diphtheria bacillus was obtained from it by cultivation. The case was removed to the Fever Hospital, and by the kind permission of Mr. A. E. Pearson, the medical superintendent, I saw the child there on January 28th. There were at this time five patches, three on the upper and two on the lower lip on the inner side. The longest patch was oval, about $\frac{1}{2}$ in diameter, of a whitish blue colour, and intimately adherent to the mucous membrane. A swab was taken from one of the patches. The child was observed to be constantly wiping the patches with her handkerchief. Mr. Hardwicke, the assistant medical officer, kindly forwarded me this handkerchief for examination. Tubes containing coagulated hydrocele fluid, sheep's serum, and agar respectively were inoculated from the swab. An abundant growth of the diphtheria bacilli was present in the serum tube in about seventeen hours, and a sparse growth in the hydrocele tube. A typical Neisser's reaction was obtained. The growth on the agar tube consisted almost exclusively of the staphylococcus pyogenes aureus. After several attempts the diphtheria bacillus was separated out and obtained in pure culture; the difficulty consisted in the agar plates being constantly overgrown with the staphylococcus. This was no doubt due to the fact that what appeared to be a single colony of the diphtheria bacillus really contained some staphylococci, as was proved on more than one occasion by microscopical examination. The bacillus was eventually grown on the various media, and all the varieties (long, short, medium-sized, as well as the long and short clubbed forms) were obtained. Six small pieces were cut out of the handkerchief mentioned above, and hydrocele tubes were inoculated from them. In each case a short diphtheria bacillus was obtained. The other microbes present were the staphylococcus aureus and the sarcina lutea. In three weeks' time six more tubes were inoculated as before, and the short bacillus again developed in all the tubes.

The staphylococcus now hardly grew at all, but the sarcina abundantly. It was thus quite easy to plate out the diphtheria bacillus, and to obtain it in pure culture. Various media were inoculated, and the different morphological forms were obtained. Thus inoculation was successfully made upon hydrocele fluid, agar, glycerine agar, and glucose agar. Specimens prepared from the last-named medium showed diphtheria bacilli of all lengths, including some enormous clubbed forms as well as short clubs. Taking into account the morphological appearances and the staining reactions, as well as the characters of the colonies on the various media, I do not think that the micro-organism which was obtained both from the swab and also from the handkerchief could be any other than the true diphtheria bacillus. [A similar examination of the handkerchief was made at the end of a further two and four weeks respectively with similar positive results.]

The subsequent history of the case, kindly furnished to me by Mr. Hardwicke, was as follows: The patches remained in the same state for about a week; they were then frequently painted with carbolic acid in glycerine (1 in 10). They rapidly diminished in size, and the patient left the hospital quite well on the thirty-sixth day of the disease. There were never any general symptoms, nor was there any albumen in the urine.

CASE II was undoubtedly one of genuine diphtherial stomatitis. So far as was known, the child had not been exposed to the diphtherial infection. The ease with which the diphtheria bacillus could be obtained from the handkerchief afforded a striking illustration of one possible method of spread of the disease. The handkerchief kept in a sterilised bottle contained living diphtheria bacilli seven weeks after the child had last used it. I intend to further examine it from time to time until I obtain negative results. It was also interesting to note that the staphylococcus aureus perished before the diphtheria bacillus.

A primary genuine diphtherial stomatitis is undoubtedly very rare. Many textbooks hardly mention it. In Baginsky's recent work upon diphtheria it is only barely referred to. The best accounts that I have been able to find of it have been by Henoch,³ Forchheimer,¹ Schech,⁴ Sanné,⁵ Henoch says that diphtheria may begin upon the mucous membrane of the lips as greyish white patches (ultimately becoming confluent) which resemble the plaques of aphthous stomatitis. In one case seen by him the disease began on the mucous membrane of the lips, then spread to the tongue and finally proved fatal by laryngeal complications. In three cases seen in his clinic Henoch thought that the diphtherial infection must have ensued upon erosions in the mouth. In two cases which he refers to the disease affected the floor of the mouth and the ligaments of the tongue, and one of these cases recovered. Forchheimer has seen two cases in which a primary diphtherial stomatitis spread to the larynx. Schech says that he has also seen two cases. In one case the patient had used a

* A paper, with some additions, read before the Yorkshire Branch of the British Medical Association, January, 1900.