

twelve hours to six days, terminating in copious diaphoresis attended with a general feeling of well-being. The therapeutic effects are said to be marked and to extend to all the symptoms; anæsthesia and joint pains disappear, ocular inflammations heal, ozæna ceases, and nasal respiration is restored; nodules are absorbed, extensive ulcers heal, hair grows afresh on the scalp, skin, and eyebrows; and bacilli, which could formerly be found with ease in the parts of the skin infiltrated with leprous nodules, disappear. The treatment occupies from three to twelve months, and its good effects are said to have been maintained in several cases for upwards of a year. Laverde read a paper on this treatment at the Berlin International Leprosy Conference in 1897, where the general opinion entertained of it was that amelioration of the symptoms had followed its application but that an actual cure had not yet been obtained.

In 1899 the well-known chemist, E. Merck, of Darmstadt, sent a small quantity of his leprosy-antitoxin to this hospital in the desire, as he expressed it, of adding his mite towards a noble and great work of scientific progress. He did not describe the origin of the toxin from which he had prepared the serum, but mentioned that his present source of it had unfortunately become exhausted. In Merck's Annual Report for 1898, the experience of Dr. Grunfeld, of Rostow, is quoted as confirming the observations of Buzzi and Carrasquilla. His experiments were carried on for six months, and it was noted that no inconvenience was caused by the injections, and that œdema retrogressed and ulcers healed, while the improved condition was maintained up to the date of the publication of the observations several months later. The dose of this serum which is labelled "Lepra-serum nach Carrasquilla" was 2 c.c. in the beginning, gradually increased to 9 c.c. I have found this same serum of remarkable efficacy in those malignant cases, fortunately rare, of tubercular leprosy, where fresh nodular eruptions appear at frequent intervals and grow luxuriantly, forming diffuse, smooth, shiny infiltrations on the face and ears, their eruption being attended with a temperature ranging from 102° to 104°. Only two such cases have been met with in the past six months in this institution, and each was injected with the contents of a phial of the serum, equal to 9 c.c., with the result that fever quickly abated, and the tubercular infiltrations in the more severe case completely and rapidly disappeared, leaving the skin shrunken, flabby, and minutely wrinkled. This patient's improvement has now been maintained for three months, and he has gained weight and strength. In the other and milder case, the nodules did not disappear so completely, but fever ceased and health steadily improved. The use of the serum in stationary cases unattended with febrile exacerbations or new nodular

formations has not been productive of any marked improvement, nor did it cause any febrile reaction, but it is possible that experience may show it to possess a retarding effect on the progressive visceral degenerations that keep pace with the superficial lesions; and in that case it will satisfy the requirements of Hallopeau in respect to its remedial powers: but, at any rate, it places in our possession a means for the relief of those severe symptoms which have hitherto baffled our therapeutic resources.

In anæsthetic leprosy it is doubtful if any special therapeutics is necessary or called for. In this form patients are not suffering from the disease itself, which is after a few years permanently arrested or in complete abeyance, but from its results, such as ulcers and mutilations of the extremities, due to trophic changes, the consequence of specific leprous neuritis. The discharges from such sores are free from bacilli, which are, however, occasionally found in the nose alone associated with specific forms of rhinitis; and even this condition may ultimately undergo a cure, so that the patient may with safety be allowed to mingle with the public.

It has been suggested by critics of the serum treatment, who have obtained only negative results from its exhibition, that the advantages claimed from its use, *viz.*, the involution of lepromata, can be equally well obtained from the use of proteins, albumoses, or other albumin derivatives, *e.g.*, a watery extract of pure culture of bacillus pyocaneus, injections of which excited marked febrile reaction in tuberculous and leprous patients only. This may be so, for in an experiment made with a bacillary protein, *viz.*, Haffkine's prophylactic, on a nodular leper child, the usual reaction followed, and no fresh tubercles have appeared for nearly two years; but, as my observations show, a febrile reaction is not necessarily occasioned by the Carrasquilla serum, nor is it essential for the production of its specific effects.

I send these incomplete observations in the hope that they may lead to a trial of the remedy on an extended scale, and that should equal success be obtained in other hands, an attempt may be made to produce the serum in this country.

TWO CASES OF HEPATIC ABSCESS; WITH CLINICAL REMARKS.*

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THE following cases, which recently occurred in the Royal Victoria Hospital, Netley, illustrate several important points in the natural history,

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diagnosis and treatment of abscess of the liver.
Case No. 1.—*Hepatic abscess evacuating through right lung; repeated explorations; signs of rupture into right pleura; drainage; secondary hæmorrhage; death.*

Sergeant-Farrier J. E. H., 11th Hussars, *at.* twenty-seven; service—home $3\frac{8}{12}$, Indian (Punjab) $5\frac{3}{12}$, total $8\frac{11}{12}$; invalided 17th January, 1898; left India 6th March, 1898; admitted Netley, 29th March, 1898. Character, regular and exemplary.

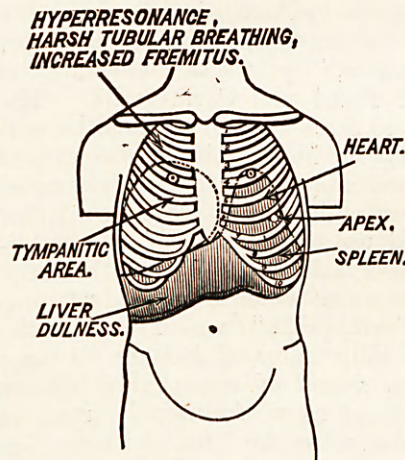
His medical history sheet does not indicate any important illness until November, 1896, when, at Sialkot, he was admitted into hospital for a smart attack of ague which detained him for seventeen days. He suffered from diarrhoea in the same station and year, but the symptoms were not so severe as to compel him to report himself sick. On the 24th of July, 1897, he was admitted at Sialkot for pneumonia affecting the lower lobe of the right lung, and was discharged to duty after nineteen days' detention. His regiment being ordered to the front, he marched to Rawal Pindi, and there received orders to shoe the horses' hind feet. He received some blows on the right side while executing this duty, which were followed by pain, and a few days afterwards, whilst at work, he suddenly spat up about a quart of blood and pus. This eased his pain, and he continued to work for a week, when, the spitting persisting, he sought admission into hospital on the 4th of October 1897. His case was diagnosed to be a hepatic abscess, evacuating through the lung. He admitted at this time having been in the habit of occasionally drinking hard. The symptoms subsided and expectoration ceased, and he was discharged to duty on the 24th of October. In November he had a return of pain in the right side accompanied by fever, and on the 20th of that month profuse expectoration of purulent matter took place. This has persisted since that time.

On admission, at Netley, he was found to be very emaciated and anæmic. He spat up large quantities of foetid chocolate-coloured material and suffered from fever of a hectic type. On seven occasions his liver was explored by means of an aspirator at different situations and levels; but no indications of pus were discovered. The last exploration, high up, drew some clear serous fluid which was judged to have come from the cavity of the right pleura.

On the 4th of October 1898, Mr. Curme made a careful physical examination with the following results:—Heart displaced, somewhat downwards and outwards; lower two-thirds of right lung absolutely dull in front and behind, with suppressed resonance and fremitus and respiratory sounds; left lung hyper-resonant with puerile respiration; expectorating between three and four pints a day of chocolate-coloured

viscid fluid containing pus and mucus, and very foetid; breathing shallow and hurried; pulse small, soft, and rapid; liver dulness extends about two inches below costal arch; temperature from 100° to 101° F. During the 5th, 6th, and 7th, his condition underwent no change. On the 8th there was a suppression of expectoration up to 12 noon, and free emission of the usual material afterwards. On the 9th, the expectoration was scanty, clear, and mucopurulent; temperature higher; dyspnoea; pulse smaller and more rapid.

On the 10th, expectoration still scanty and clear; dyspnoea and palpitation distressing; aching pain over right side. Heart greatly displaced to left; apex beat in 6th interspace, $3\frac{1}{2}$ inches below nipple and 2 inches external to it, action tumultuous, impulse and sounds diffused, pulse 126. Liver dulness extends to near level of umbilicus; spleen enlarged. Tympanic resonance from second to sixth rib anteriorly, extending to mid axillary line laterally; absolute dulness over rest of lung posteriorly; level of dulness altered by changing position. Resonance and vocal fremitus exaggerated superiorly, suppressed inferiorly; respiration harsh at apex, faint and distant or



absent elsewhere. Left lung the same as before, respirations 88, shallow. The accompanying diagram indicates roughly the conditions observed on the 10th of October, from which, in conjunction with the general symptoms,

the inference was drawn that the abscess had broken into the right pleura, the lower two-thirds of the cavity being filled with pus and air, and the upper third shut off by adhesions. Direct drainage through the chest wall was, therefore, deemed advisable to relieve symptoms and permit of free discharge of pus and obliteration of the abscess cavity. Accordingly, the patient was transferred to the surgical division, and on the 11th, Major Dick, after the man had been anæsthetised with chloroform, introduced an aspirator needle for the purpose of exploration, through the 7th inter-space in the mid axillary line. After the instrument had entered about an inch and a half, a free discharge of grumous foetid pus took place. A free incision was made and an inch of the

seventh rib removed. Large quantities of dark brown material flowed forth. The finger entered a spacious cavity, with smooth irregular walls; but no aperture in the diaphragm could be detected. The later discharge was thicker and more like liver pus. Two large drainage tubes were inserted, and a voluminous antiseptic dressing applied. It was observed after the operation that both heart and liver had resumed their natural positions.

The operation was followed by decided relief. The temperature fell, the breathing became easier and heart's action steadier. The patient was able to sleep, and felt altogether much more comfortable. The discharge continued for a few days to be very copious and putrid, but became on the 14th less grumous and foetid. He had a slight attack of diarrhoea on the 17th and 18th which was checked by opium and astringents. On the 18th he had a subnormal temperature, and on the 19th there was pain in the right side, and no discharge on the dressings. The tubes were withdrawn and found to be blocked with slough. They were cleared and reintroduced without trouble. Shortly after hæmorrhage set in, which proved quickly fatal.

A *post-mortem* examination was performed on the 21st by Captain Lamb, I.M.S., who kindly supplied the following notes:—*Rigor mortis* well marked; body fairly well nourished; a wound $1\frac{1}{2}$ inches long on right side of chest in mid axillary line, corresponding to 7th interspace. On opening the thorax, *right lung* found to be adherent to the pericardium to a slight extent, and for a considerable distance around the above-mentioned wound there are strong fibrinous adhesions; on breaking these down a large cavity is opened involving the lower lobe of the lung; this is full of blood-stained pus, with a considerable amount of clot and broken-down lung; the cavity involves the whole of the lower lobe of the lung; the upper part of the pleural cavity completely shut off by strong fibrinous adhesions.

Left lung and pleura healthy.

Pericardium contains about $2\frac{1}{2}$ ozs. of clear fluid; the *heart* is somewhat flabby, but otherwise healthy. The upper surface of the right lobe of the *liver*, the diaphragm over this, and the inferior surface of the lower lobe of the right lung is firmly adherent together. On cutting into the liver towards the upper and back surface of the right lobe, an abscess cavity about the size of a tangerine orange is opened into; it is full of inspissated thick pus which is neither bile nor blood-stained; the cavity is limited all round by a very thick membrane, honeycombed on its inner surface. Between this cavity and the thickened layer which binds the lung and liver so firmly together, a thin layer of liver tissue can be dissected off, and no communication of any kind is detected between this cavity

and the cavity of the lung. The lung cavity, as previously mentioned, involves the whole of the lower lobe; its walls are rugged and numerous; bronchioles open into it; no opening into any artery can be detected. Liver generally is slightly enlarged, pale and mottled.

Spleen is very dark and considerably enlarged.

Kidneys healthy.

Intestines. No ulcer or cicatrix is found in either small or large gut.

Case No. 2.—*Enteric fever; right pleuro-pneumonia; evacuation of 24 ozs. of serum from right chest; rupture of hepatic abscess into right pleura; death.*

Private C. R., R. I. Fusiliers, *æt.* 22; service—home $2\frac{1}{2}$; foreign (Egypt) $\frac{7}{2}$; total, three years. Invalided from Alexandria, 1898. Admitted 20th September, into Netley Hospital 3rd October, 1898.

He was admitted into hospital from the Mustapha Barracks on the 15th of July, 1898. His case was diagnosed as enteric fever, which is reported to have run a prolonged course "with the usual symptoms." He was greatly debilitated. He improved slightly on the voyage home, but complained of pain in the right side.

On admission, he suffered from cough, pain in upper part of right chest and tenderness in right groin. He was very weak and emaciated. On examination the right chest was found to be dull to percussion below the level of the nipple in front and behind. Left lung hyperresonant. Heart displaced downwards and outwards. Liver dulness extended about two inches below costal margin. Sputum copious of a chocolate-brown colour, viscid and almost odourless. Temperature of a hectic type. Diarrhoea troublesome. On the 9th of October, the signs pointing to pleuritic effusion, the right chest was aspirated by Major Dick in consultation with Lieutenant-Colonel Webb, and 24 ozs. of clear, straw-coloured fluid were removed.

The operation was followed by considerable relief, but the tenderness of lower chest and right groin persisted. On the 13th of October, it was noticed that the cough was not so troublesome and that the character of the expectoration had altered—had become clearer and lost its brown tinge. On the 17th, pain in the hepatic region was acute, and some blood was passed with the stool, the diarrhoea continuing. On the 21st, a decided change for the worse occurred. The hepatic tenderness was more marked, and the liver dulness had descended. There was also some œdema of the hepatic area, and the sputum had resumed its previous character. Abscess of the liver was now suspected, and exploration proposed; but the patient firmly resisted any operative interference. His condition grew

rapidly worse, and he sank of exhaustion on the morning of the 23rd of October.

A *post mortem* examination was performed on the forenoon of the 26th by Captain Lamb, from whose notes the following facts are abstracted:—

External appearances.—*Rigor mortis* gone; body fairly well nourished; considerable bulging of right side of chest which is absolutely dull on percussion from the clavicle to below the costal margin.

Thorax.—On opening right thorax, a large quantity of dark purulent matter escapes; the right pleural cavity is distended with this material. Right lung completely collapsed and pushed to the back of the cavity which communicates by an opening in the diaphragm, about the size of a crown piece, with a large cavity in the right lobe of the liver. The wall of the pleural cavity is irregular and ragged, and is partly constituted by the middle lobe of the lung, which is deeply excavated, several bronchioles opening into the cavity; pleural membrane thickened. Upper and lower lobes collapsed and flattened and sink in water.

Left pleura free from adhesion; lung slightly oedematous. Pericardium contains fluid; heart pale and flabby, otherwise healthy.

Abdomen.—Liver considerably displaced downwards; right lobe excavated by a large abscess cavity about the size of a child's head at birth, and full of dark grumous pus. Liver tissue fatty and congested (nutmeg liver). A small abscess in left lobe near the upper surface, about the size of a pea. Spleen and kidneys normal.

A considerable number of ulcers are found in the cæcum and ascending colon; they vary in size from a pea to a florin, are raised and floored for the most part with irregular sloughs. They vary, in shape, some being circular and others oval. Some solitary glands in their neighbourhood are observed to be swollen. Peritoneal surface opposite ulcers, dull and thickened. No ulcers or cicatrices in small intestine or other portions of large intestine.

REMARKS.

These two cases occurring, as often happens in hospital experience, at the same time, illustrate some interesting points and raise some useful practical questions in relation to the spontaneous evacuation of hepatic abscesses through the lung, and the proper management of such cases under various contingencies, which may be dealt with under the following heads:—

1. *The situation of the abscesses.*—In both cases the cavities occupied the upper and back part of the right lobe adjoining the fissure for the vena cava. This is the usual site in such cases, and offers less resistance upwards than in any other direction. This position also accounts for the difficulty experienced in finding the

abscess with an exploring instrument, either from the front or side; also for the absence of signs, such as fulness, fluctuation, circumscribed tenderness, intercostal bulging, or oedema, which exist in liver abscesses which lie closer to the surface.

2. *The preliminary processes.*—These are phrenic and pleuritic to start with—first inflammatory and then destructive. The circumferential adhesions are the protective outer zone of a process whose centre is necrotic. During this stage, the symptoms are thoracic rather than hepatic and pleuritic rather than pulmonary. In both cases an extension of pleurisy in milder form affected that portion of the membrane which had been shut off from the abscess cavity by adhesions, resulting in serous effusion into the pleura—slight in case No. 1, and copious in case No. 2; so copious, indeed, in the latter case, as to mask the real and more important disease. This possibility of occurrence of serous effusion into the general cavity is a clinical fact of importance to be held in view. The signs and symptoms indicating the existence of these preliminary processes are pain in the region of the diaphragm, sometimes of a very acute character, extension of liver dullness upwards, painful catching on deep inspiration, dry cough, fixation of right chest and friction over the base of the right lung.

3. *The Secondary Abscess.*—Whenever a liver abscess seeks a distant point of discharge, it is by means of formation of secondary abscess that the object is sought to be accomplished. Such abscesses occur in the epigastrium, hypochondrium, chest wall or loins, and they simulate parietal abscess, and are perhaps opened as such. The peculiar character of the pus reveals their true character, and on exploration with the finger, a more or less contracted aperture is found, admitting entrance into the liver cavity, unless, as may happen, this has been shut off. In evacuation into stomach, duodenum, colon, peritoneum, pleura or pericardium, such secondary abscesses are not formed. In cases of evacuation through the lung, cavities are excavated in that organ, either by irruption as in case No. 1, or erosion as in case No. 2. The lower lobe is the usual seat of the destructive process which opens the bronchioles and gives exit to the discharge. In case No. 2 the middle lobe was the portion implicated. The abscess had climbed up along the right side of the pericardium, and the eroded lobe formed its outer wall. Indications of gangrenous destruction of the lung substance were evident in both cases, and what remained of the lobe in both was compressed and consolidated. Why it is that in some instances complete and rapid evacuation is accomplished, and in others the process is delayed or fails to be completed until death by exhaustion occurs, it is not easy to conjecture. The

first case is an illustration of apparently complete evacuation in a short time, and then, after a period of apparent convalescence, recurrence of the symptoms. This is not an uncommon history, and the period of intermission may be a prolonged one. Sometimes it looks as if a second abscess of the liver had formed, and was seeking exit by the old route; but probably in most cases the event is due to fresh accumulation in the old cavity. In either event the original symptoms of fever, pain and weight in the side, &c., are reproduced.

4. *Irruption into the pleural cavity.*—In some instances this event is primary, in others secondary. In case No. 2 it was undoubtedly the latter—must have occurred between the period of aspiration and death. Perhaps the removal of the pleuritic effusion, by altering the balance of pressure, caused or conduced to the rupture of the membrane separating the pleural from the abscess cavity. There was no indication of the accident, and in case No. 1, there were indications which appeared to be very positive and convincing; but they were due to acute distension of the lung cavity with pus and air, owing probably to failing expulsive power. Whether the filling of the pleural cavity with the products of hepatic and pulmonary destructive suppuration be primary or secondary, there can be no hesitation regarding the immediate necessity of making a free opening in the parietes (including resection of a rib or ribs) and establishing free and direct drainage. I have seen recovery take place in very desperate cases of this nature.

5. *The reparative process in the liver.*—In case No. 1, this was advanced; the communication between lung and liver had been obliterated; the abscess cavity had been encysted; its wall thickened; its contents degenerated and converted into a fatty emulsion which would in time have become caseated and then cretified. The pathological struggle had been transferred to the chest. In case No. 2, indications of reparative change also existed; the abscess wall was thick and globular, shutting out the cavity from the liver substance, which was no longer being broken up: the walls were lined with lymph, and progressive organisation and contraction of the cicatricial material would, no doubt, had the man lived, have accomplished the shrinking, and more or less complete obliteration of the liver abscess. There also the burden of morbid activity had been translated to the cavity of the right chest.

6. *The diagnosis.*—The history in both cases was obscure. In No. 1 the abscess of the liver must have been in existence—latent or concealed—until the events of October 1897 disclosed its existence. The diagnosis of rupture into the pleural cavity was wrong, but the physical signs and general symptoms pointed to that accident.

The treatment adopted was, however, correct. In No. 2 it is more than doubtful that the man ever suffered from enteric fever. The conditions found after death must have taken a considerable time for their development, and the pyrexia, combined with the caecal lesions, must have closely simulated enteric. The acute pleurisy further masked the abscess, until shortly before death, when the true nature of the case was recognised. An exploratory puncture through the chest wall would then, if permitted, have fully confirmed suspicions and led to the only practice which offered any hope or possibility of cure. The existence of an incipient abscess in the left lobe of the liver might, and probably would, have thwarted recovery even if removal of the morbid material had been procured by a free drainage opening.

7. *Cæcal dysentery.*—Case No. 2 was a typical example of a dysenteric process, affecting mainly the solitary glands, confined exclusively to the cæcum. In these cases, the classical symptoms of dysentery—tormina, tenesmus, colic, thickening, angina and frequent scanty discharges of blood and mucus are apt to be suppressed, and those of enteric fever simulated. The lesions in the cæcum were of long standing and may have preceded the hepatic lesion.

8. *The lesson to be learned.*—The question suggested by these cases is—whether exploration of liver abscesses seeking vent through the lungs should not be made above, rather than below, the diaphragm. I have seen so many failures to hit the liver abscess by exploration from below, through the substance of the liver, that I am inclined to think that a cautious search along the convexity of the diaphragm would be a safer and more successful proceeding. The general cavity of the pleura is in this situation shut off by adhesions, and the route of approach indicated would also be the best route for drainage in the event of the cavity being broached. The exploration might be made by the aspirator needle introduced through the 7th interspace and pushed directly inwards, or by incision through the same interspace and subsequent use of the finger or director or a straight catheter.

ON THE METAMORPHOSIS OF THE
FILARIA NOCTURNA IN MOS-
QUITOS OF THE *ANOPHELES*
GENUS.

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THE difficulty of keeping mosquitos alive in confinement for any length of time, has, since the first discovery by Manson of the metamorphosis of the *Filaria Nocturna* in this insect, prevented until lately the confirmation of his discovery. Recently, however, Dr. Bancroft in