

suspecting importation, but there is want of certainty that the disease was true cholera. In the other two instances probability of importation, though slight, cannot be altogether excluded, but inasmuch as they were isolated outbreaks, or first outbreaks after long intervals of freedom from epidemic prevalence, the probability is great that the conditions under which they occurred are those under which cholera is generated if it ever is generated *de novo*. The conditions present in all the three outbreaks above described were intense heat and great dryness of atmosphere, and water used for drinking in which organic impurities were highly concentrated; in the two outbreaks last cited, the death of the fish and their subsequent putrefaction probably gave greater intensity to the views.

August, 1883.

REPORT ON SOME OBSERVATIONS IN CONNECTION WITH PNEUMONIA AS OBSERVED ON THE PUNJAB FRONTIER.

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(Concluded from page 239.)

I will first describe a type-case, combining, as well as I can, the characteristics I have noticed in the 15 or 20 cases which I have altogether met with.

In many cases it will be found that the patient's system has been reduced to a receptive condition by some previous ailment, more than one of my cases were first admitted with, or had recently been suffering from fever, and some others had had bronchial catarrh for some time previously.

The method by which contagion might be carried from man to man can easily be understood.

A sepoy, perhaps in the earliest stage of convalescing from the disease, spits on the earthen floor of his hut.

This drying, becomes a constituent of the dust which covers the walls and floor and fills the air of such habitations, is breathed in

by the other occupants, and its spores arrested by their nasal and bronchial mucous membranes.

Those who from previous catarrh, or from low state of health, offer a suitable soil for the development of these micrococci, may, it is easy to imagine, become the selected victims of the disease.

The proposition that all these cases of pneumonia supervene on a state of low health, is of course in no way advanced.

My field of observation has been too limited to in any way indulge in generalization. This, however, is the impression yielded by a very limited experience, that at any rate a large proportion of cases are below par when attacked.

Usually even when first seen, the temperature of the body is high, 103° - 105° F., from which circumstance the conclusion may be drawn that the invasion is very sudden and the rise from the normal very rapid.

The pulse is frequent, weak and compressible the artery being relaxed and full.

The tongue is foul, bowels irregular, generally relaxed, but in some costive.

Respiration is greatly accelerated, quite apparently out of proportion to the extent of being involved at this period, but is very shallow and catchy.

On questioning the man, he usually complains of great pain, and tenderness on one side, and on listening at the point indicated, a pleuritic rub may very commonly be heard.

In every case I have as yet watched closely, there has been, at some period, more or less marked pleuritic signs present, generally in the early period of the case.

This pleuritis, however, in one of the cases only, proceeded to effusion, and in that one to only a very limited extent.

Commonly at this stage there is no marked dulness, but only irregularly disposed patches, where resonance is impaired.

At this period, there is usually but little expectoration, and on applying the stethoscope, the breathing is heard to be harsh, and the ex-

piratory sound prolonged and abnormally audible. Usually some scattered noisy bronchitic râles are to be heard.

If the blood be now examined with a high magnifying power, it will be found to contain multitudes of minute rounded bodies, similar to those which have been already described as present in the blood, and pleuritic fluid of rabbit No. 1.

In the cases that came earliest under observation, the small form alone could at first be seen.

After a day or two the other or nucleated form makes its appearance.

These are about three times the diameter of the first sort, the nucleus in size and appearance being much like one of the smaller form. If the precaution be taken of warming the slide and rapidly brushing a little oil round the edge of the cover, and the examination be made as quickly as possible, many of the smaller sort will be seen to have two motions, the ordinary "Brunonian" vibration and an independent locomotion of their own, often sufficiently strong to enable them to move in opposition to the general current of the blood, running by gravitation from the upper to the lower edge of the cover.

It is hard to get a sharply focussed image of these bodies, but when the adjustment of the light and of the screw collar of the objective have been lucky, these locomotive particles as they turn are seen not to present a circular contour in all positions, but to be pear-shaped, and as the cooling of the slide causes the blood to coagulate, and the motions become thus stopped, I have in some instances "glimpsed" faint indications of a lash springing from the smaller end, so that the whole body would be much like a spermatozoon in shape.

It does not appear, however, that all are furnished in this manner, many shew only the Brunonian vibration, and a day or two after the onset of the disease, the smaller form are commonly found united in chains of from two to ten individuals, under which circumstances they must have abandoned their tails and reached

a resting condition. In the larger nucleated form I have never observed any signs of locomotive power.

Coincidentally with, or soon after, the appearance of the nucleated form, congeries of the smaller sort are found united together, by a hyaline material, into masses reaching to as large as three or four times the size of a leucocyte.

This material, whatever be its nature, is of a firmer consistence than the red blood corpuscles, for the latter, when moved by pressing on the cover-glass, are seen, as they pass these masses to have their form altered by contact with the masses (which I take to be a zoogloca stage of the parasite), they remaining quite unaltered in shape.

On or about the fifth day there is usually a sudden diminution in the number of micrococci present in the blood, but that is not permanent, a more or less complete cycle of the same sort re-commencing.

The stages, however, are not so distinct as in the first instance; there being, as a rule, a few of each sort present in addition to those which preponderate. After a second series has been completed, it is almost impossible to make out any signs of a third, the process having apparently become confused.

As the patient recovers, they become fewer and fewer, but persist in scanty numbers up to complete recovery; indeed in one case (recorded further on) they were still to be found five days after the patient had returned to duty.

To return to the clinical progress of our case,—the temperature with a moderate morning's remission continues high for from 5 to 10 days, and then drops almost critically nearly to normal, which is usually reached in two days.

The pulse grows more frequent and weaker, and in bad cases becomes almost imperceptible. Any improvement in its strength, is a most favourable omen.

The physical signs increase in gravity, patch after patch becoming, in one or both lungs, dull,

but, it appears to me, in quite a different fashion from what is seen in the acute croupous pneumonia one was accustomed to meet with in Europe; the distribution of the dulness being, at any rate at first, curiously irregular, *e. g.*, in the flank, and mammary region perhaps, but little impaired resonance, while the lower part of the lung in front, and the scapular region behind, may be absolutely dull.

Even when the disease is at its climax, a slight shifting of the stethoscope or of the percussing finger will often bring to notice quite altered physical signs, so that a complete report of the physical signs of any given day would occupy several pages were all recorded.

Hence one is apt to get the impression that the signs in any given region are curiously evanescent, and have chanced between one day's observation and the next's; the true reason being, probably, that one has failed to hit upon the exact spot that one examined on the previous occasion.

The dull area increases up to the time of the sudden fall of temperature, and remains stationary for a day or two after.

Then, as a rule, the auscultatory signs take a moister character, and the few crepitations previously heard, mixed with coarser bronchitic sounds, become quite drowned by the latter. When at the worst, there are often large patches, over which there is almost absolute silence, or only a few crepitations on making the patient take a deep breath.

These spots begin first to crepitate, then are heard larger and larger moist râles, and finally, in recoveries, the chest clears up, usually with great rapidity.

During the stage of consolidation, vocal resonance and fremitus are often exaggerated, but never that I have seen, to the marked degree characteristic of the croupous pneumonia of Europe.

The sputa at first consist of clear, glairy mucus; after a time they become opaque, of peculiar greyish red colour, with flocculi of more solid grey material, which sink to the bottom of the vessel.

Fine streaking, or slight tinging with blood, is common enough, but I have not as yet met with the regular "prune juice" sputa of ordinary croupous pneumonia.

Up to the commencement of recovery the sputa are very airless, shewing but a scanty amount of froth on the surface, and are extremely glairy and tenacious, clinging firmly to the vessel in which they are contained.

As the patient mends, they become more copious, yellow, and muco-purulent like the expectoration of acute bronchitis; finally they become again clear and mucous, and then cease.

Here then is a disease which, though equally acute, and similar in the course of the temperature to acute croupous pneumonia, yet presents, as to physical signs and clinical symptoms, a greater similarity to broncho-pneumonia, the disease being probably lobular and not lobar.

A further peculiarity is the strong tendency to be complicated by inflammation of the pleura.

Appended is a copy of the notes of the case, in which the above described bodies were first observed in the blood, with an abstract of the notes of four other cases.

These will be sufficient to illustrate, without too much iteration, the points advanced above.

Beside these, however, I observed the micrococci daily in the blood of several other cases, which came under my care in the 4th P. I., and casually in some other cases in the 1st P. C., and 5th P. I. hospitals.

They were found, in fact, in every case I have as yet examined.

As to the exact nature of these bodies or their causal connection, or otherwise, with the disease in question, I should be unwilling, on so limited a number of observations, to hazard any decided opinion.

Since I commenced this report, a slight case of pneumonia has occurred amongst the guard of the 4th P. I., detected to this station.

(Shaik Budin.) By chance I have obtained some anilen violet, and I find that these bodies, which are present in the blood of the man, also do stain with this dye in the manner

described by Koch. This circumstance, their becoming grouped into chains, their forming zoogloea like masses, and the order in which they make their appearance, seem, to say the least, to point strongly to their being of vegetable nature—micrococci in fact,—the larger nucleated form being perhaps in some way connected with their reproductive process.

It seems a very significant fact, that these nucleated cells made their appearance the same day in the blood of dying rabbit (No. 2), and in the serum from the pleura that had been put aside from the autopsy of the rabbit No. 1 which had died on the previous day.

That the rabbits died of a pleuro-pneumonia, and not of septic poisoning, is clearly enough shewn by the records of the *post-mortem* examination of the animals.

Personally I have not as yet been able to trace clearly any instance of contagion, but am nevertheless strongly inclined to believe, that the disease is capable of being transmitted in this way, probably through the medium of dried sputa diffused through the air.

Certainly I should always continue to isolate any case that may occur.

In favour of this view I received a strong piece of confirmatory evidence from Lieut. F. Egerton, late of the 3rd P. C., who tells me that in that regiment, some years ago, there occurred an outbreak of pneumonia, almost confined to the Dogra troop, 14 or 15 of whom died of the disease, while the other troops remained nearly free.

Should contagion be a fact, much might be done to prevent the spread of the disease. Greater air-space in the huts, and the adoption of brick, stone, or pukka flooring, capable of thorough cleansing would, no doubt, do much to prevent not only this, but mumps and other diseases which cause much inefficiency among sepoys during the year.

Before closing these remarks I must, however, mention one other point that has been to me very puzzling.

This is, that in the blood of men suffering from ordinary malarious fever, are to be found

bodies to all appearance identical with those seen in pneumonia.

It is possible that more extended observation may lead to the discovery of some points of difference between them, and, in the absence of any means of accurate micrometry, I should be by no means prepared to pronounce that they are identical, but in general appearance they are certainly very similar.

It was in seeking for the bacillus malariae, that I found these bodies in fever patients' blood, and though I continually met with these, it was some time before I saw any sign of the bacillus.

At last I found a patient newly admitted, actually in the shivering stage, and on examining his blood, the bacillus could be made out plainly enough in addition to the micrococcus-like bodies, a couple of hours after the hot stage having supervened no bacilli could be seen. After this, by treating a few cases of quartan fever without any form of quinine, and by making a point of being at the hospital at the time at which the cold stage might be expected to commence, I again and again made out the bacillus quite plainly.

My previous want of success was, no doubt, due to my not examining the blood at the right period, or else in cases under the influence of quinine.

The stay of these cases (treated without quinine) in hospital was, however, no longer than the average.

So far then all that can be definitely said, is that, in this pneumonia of the frontier, there are present in the blood certain bodies which are not present in the blood of healthy subjects, and that these bodies run through certain changes in a fairly regular manner.

I hope during the coming cold season to have opportunities of testing this question further, and under more favourable circumstances as to apparatus, re-agents, &c.

At present I labor under the deficiency of being quite without books of reference, all my books, and most of my microscopical and microphotographic arrangements, being still at

Calcutta, which circumstance will, I hope, serve as some apology for the very incomplete character of the present investigation.

ON THE TREATMENT OF ANEURISM BY ESMARCH'S BANDAGE.

BY SURGEON S. HASSAN, M.B., I. M. D.

Essur Singh, a Hindoo male, aged 40 years, was admitted into the Amritsur Civil Hospital* on the 16th June 1883. Occupation sedentary, and not requiring great physical or muscular exertion. Temperament not marked, if anything rather lymphatic. No signs of pain or prolonged suffering on the features. Sits in bed with right leg somewhat flexed. Complains of a tumour in the popliteal space, which he says is pulsating and painful, especially when he tries to walk.

No history of rheumatism, drunkenness, or syphilis can be elicited, nor are there any suspicious signs of these conditions. Says that while travelling in an *ekka* he was thrown out—the horse stumbling and coming down on the patient's right leg. At the time he only felt a severe pain in the knee, shooting down the leg to his foot; but about a fortnight afterwards he noticed a small pulsating swelling in his ham, which has gradually attained its present size.

On examination a large tumour was found, the size of a closed fist, situated in the lower part of the popliteal space, encroaching downwards on the leg to about the level of the lower border of the popliteus muscle, and reaching above a little beyond the line of the flexure of the joint. It was ovoid in shape and regular in contour, smooth, even, and of nearly the same density and firmness throughout its whole extent. The pulsation was distinct, forcible, expanding and eccentric, and the other characteristic signs of the disease were so marked that there was no difficulty in diagnosing it as a circumscribed aneurism.

No pulsation was visible in the superficial arteries, nor did they present any hardening or

other perceptible change: other organs apparently normal. Pain and general suffering when at rest were not great, and the patient could sleep fairly well. Difficulty and pain in locomotion were his most serious troubles; comparative measurements of the two joints were not taken.

Considering the case a good one for the "rapid method" of cure, I recommended Esmarch's bandage, which was accordingly applied on the 19th, thus:—Commencing at the foot it was carried firmly and without reverses up the leg to the lower level of the tumour, over which it was passed lightly, and was again firmly applied to the thigh, ending about its middle. The elastic tubing was then adjusted over the last turn of the bandage. When I saw the patient the bandage had been applied for some time; I took it off however, and left the elastic tubing alone *in situ*. The patient's suffering was intense, and the limb became gradually colder. The pulsation in the tumour was completely stopped, and it had become decidedly harder to the feel. At the end of two hours from the time the bandage was first applied, the elastic tubing was removed, when faint pulsation was felt in the tumour. Pressure was now applied to the femoral at the groin by means of a horse-shoe tourniquet, which was removed at intervals, as it became very painful. This was continued for about twelve hours, and was then removed altogether, the pulsation having stopped meanwhile. During the course of this treatment lead lotion was applied externally to the tumour.

20th.—No pulsation. No pain in the tumour. Complains of pain over the inner ankle.

22nd.—No pain in the leg or ankle. No pulsation in the tumour, which is softer. The patient was very anxious to go home, but having been persuaded to stop, he absconded, unnoticed, to my great annoyance. No observations could be made about the return of pulsation in the arteries about the knee. I may add that pressure with an ordinary pad and bandage had been tried in this case, but the patient could not bear it, and it had to be removed.

* I am indebted to Surgeon-Major G. Thomson for his kind permission to publish these notes, and for general access to the wards of the Amritsur Civil Hospital; and to Assistant-Surgeon Sahib Ditta Mull for affording me every facility in the examination and treatment of interesting cases.