Remarks

ON A

CASE OF PNEUMOCOCCUS INVASION
OF THE THROATUPON WHICH LARYNGEAL AND PULMONARY
TUBERCULOSIS SUPERVENED.

BY

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IN November, 1908, I delivered at the Polyclinic a lecture on the question of pneumococcus invasion of the throat, which was later on published in the *Medical Magazine* for December, 1908. In this lecture I described two cases of a hitherto unrecorded affection of the throat due to pneumococcus invasion. The material being so small, it was of course impossible to establish a full and characteristic picture of this new form, and I contented myself, after describing in detail the course of the affection in the two cases I had observed, with saying that I had "seen two cases of a throat affection which were characterized by a course entirely different from any known to me in other diseases of that part, namely, by showing the most surprising fluctuations between intensely painful inflammatory conditions of the throat and improvements which appeared to render complete and speedy recovery almost a certainty, but which repeatedly gave way to absolutely unexpected aggravations, until finally—in the one case certainly spontaneously, in the other one during an iodide of potassium treatment—complete recovery took place."

I further stated that these cases were characterized by profound asthenia, by ulceration of the affected parts, by an almost entirely afebrile course, and by complete absence of swelling of the cervical lymphatic glands; that in the first case pneumococci were present almost in pure culture, whilst in the second case the culture consisted predominately of pneumococci, and that in both cases towards the end a punched-out loss of substance occurred, whilst by far the greater part of the ulcers healed without leaving any scarring behind.

So far as I know, no further instances of pneumococcus invasion of the throat have been recorded since. Having lately had the opportunity of observing a third case, which ended fatally, owing to tuberculosis supervening upon the original infection, I consider it my duty to place its details on record.

Mr. H. R., aged 45, a well-known and universally respected member of our profession, suffered from sore throat early in September of last year whilst in Scotland. He consulted Dr. P. McBride of Edinburgh on September 25th, who found nothing but an enlargement of the lingual tonsil.

I saw the patient, who was a great friend of mine, on October 27th. He then complained of unpleasant sensations in the throat, which were referred to the region of the lingual tonsil. He had not felt well in Scotland, he told me, and shortly before his return the symptoms had localized themselves in the region of the base of his tongue. The lingual tonsil was found to be distinctly swollen, and was treated with applications of a solution of iodine and iodide of potassium (Lugol's solution). After a few applications the swelling decreased, and the patient for a few days felt better.

On November 5th he returned, complaining of distinct pain in the left side of his throat. An irregular superficial small ulcer, surrounded by a small area of whitish discoloration, was seen in the lateral wall of the throat, just opposite the last molar, and in its neighbourhood a few small irregular spots of white infiltration, but without loss of substance, were visible. The ulcer was not bigger than a split pea. It was cauterized with a weak chromic acid solution, and, as this proved of no avail, with a solution of nitrate of silver (60 grains to the oz.). For a time these applications afforded relief; usually, however, within a few days after disappearance of the ulcer, it reappeared, sometimes with, sometimes without, a whitish infiltration

in its neighbourhood. No enlargement of cervical glands was ever present.

The course of the affection induced me to think of a pneumococcus infection, as in several respects it corresponded to my first case, and on telling the patient of my suspicion, he submitted a specimen of a scraping from the ulcer to the bacteriological institute of his own hospital, with the result that an almost pure pneumococcus culture was obtained. After this I informed him that the affection would probably last a considerable time, but that ultimately recovery might be hoped for with certainty, to conclude from the issue in my previous two cases. For nearly two months the patient, who was devoted to his work, continued, in spite of his affection, to attend his private duties. On meeting him one day over a bad septic case, I strongly warned him not to expose himself to infection whilst his throat was in an ulcerated condition, but could not prevail upon him to take care of himself in this respect.

During the first days of the month of December he told me that he had been occasionally a little feverish. On December 15th the pharyngeal ulcer had again almost disappeared, but there was distinct swelling of the mucous membrane over both arytenoid cartilages without subjective symptoms of any kind. On December 21st there was again no recurrence of pharyngeal ulceration, but the mucous membrane over both arytenoid cartilages was very much swollen, partly oedematous, and the epiglottis too had very suddenly become tumefied and oedematous, so that the aspect of the larynx was almost typical of laryngeal tuberculosis. The patient's voice had become husky, and there was slight difficulty in swallowing. His pulse was quiet and the temperature was normal, but I sent him to bed all the same, asked him to put a Leiter's tube round his neck, to suck ice, and to live on cold fluid food only.

When I went to see him on the 22nd at his house, I found him considerably relieved, the swelling of the arytenoids had considerably diminished, that of the epiglottis was unchanged. I was very doubtful whether I should consent to his going into the country, as he had wished, on account of the laryngeal oedema, and ultimately arranged that he should come and see me next morning before going away. When he called on the 23rd, another considerable change had taken place; the oedema of the epiglottis was materially reduced in size from what it had been on the previous day, although it had not quite disappeared, whilst the oedema over the arytenoid cartilages, and indeed over the whole posterior wall of the larynx, had again considerably increased. Although he said that he felt much better, I had great doubts about the wisdom of letting him go into the country in this condition, and sent him to Mr. Butlin for a second opinion. He returned and told me that Mr. Butlin had at first sight said he would certainly have considered the larynx tuberculous, but that he had never seen a tuberculous swelling of this kind originate so suddenly. All the same, he thought it would not be wise for the patient to go into the country whilst in this condition. Upon this joint expression of opinion the country visit was given up.

In the course of the next week matters remained very much *in statu quo*. The patient was kept indoors, and for the first two or three days wore a Leiter's tube with ice-water round his neck. As this proved ineffectual to reduce the laryngeal swelling, repeated applications of mustard plasters were made to the neck, with no better result. He occasionally suffered from very slight pain in the left side of his throat, where the pharyngeal ulceration had reappeared, and from slight difficulty in swallowing. The actual conditions varied from day to day. One day the epiglottis was more swollen, next day the swelling had diminished, and the arytenoids, which on the previous day had been less swollen, had meanwhile become more oedematous. On one occasion he had slight disturbance in breathing in the evening, but this passed so quickly away that he did not think it necessary to send for me. Meanwhile the patient, although he would not admit it, became visibly depressed. Neither internal administration of iron and quinine nor the use of a spray of adrenalin and cocaine had any effect upon the local conditions. I did not dare at that time to give iodide of potassium on account of the laryngeal oedema, which I was afraid might be increased by the use of that drug.

On December 30th the swelling of the epiglottis was very much diminished, that of the arytenoids quite unchanged; fresh ulceration had appeared in the pharynx, this time on both sides symmetrically; the ulcer on the left side had again above it quite a lot of serpiginous white opacities in the mucous membrane. Although the effect of the injections of a pneumococcus vaccine had not been a success in my first case, I suggested that Dr. Bulloch, who was a friend of the patient's, might be asked to prepare some such vaccine, and to this the patient, who had been all along desirous of trying this treatment, at once agreed. The same night when this was decided upon and previous to any vaccine treatment he had a slight rigor, followed by a rise of temperature to 101° . At the same time his throat felt very uncomfortable. This, however, passed off quickly, and the following morning he was none the worse for the attack. The epiglottis was less swollen that day, the pharyngeal ulcers were healing, and the oedema over the arytenoids was unchanged.

On January 2nd the patient, who had been seen on the previous day by Mr. Bowlby, who was a friend of his, was distinctly better. He could swallow more easily, had hardly any pain, and had had a good night, although the temperature on the previous evening had again risen to 100° . Dr. Bulloch informed me on that day that the swab which had been taken from the patient's throat contained various micro-organisms, with great predominance of pneumococci; that he had injected a rabbit and four mice with the culture, and that he was about to prepare a vaccine from it. On that day the oedema had quite disappeared from the epiglottis, the swelling over the arytenoids was much diminished, and the grey discoloration in the pharynx had given way to more natural colour, whilst the ulceration in that part had quite disappeared on both sides. The patient was allowed to take some warm food, was given a tonic, and permitted to take a little outdoor exercise, weather permitting.

It ought to be mentioned here that during the time the patient was in bed I almost daily carefully examined his chest without detecting the slightest evidence of disease.

His improvement continued during the next few days, and it was decided in consultation with Mr. Bowlby to grant the patient's urgent request, and let him go to Shanklin to recruit his strength, where he was to be under the care of Mr. Cowper. Now that the oedema had completely disappeared from the larynx, I gave the patient iodide of potassium as a matter of conscience, although there never had been any history nor any symptoms of specific disease. I may say at once that the drug had no effect whatever.

The reports from Shanklin were only moderately satisfactory. On January 18th Mr. Cowper reported that there had been a considerable amount of oedema of the uvula, and that after this had diminished the tumefaction of the epiglottis had returned, whilst small ulcers were now visible in the mucous membrane over the arytenoid cartilages.

On January 24th an inoculation was made of 7,000,000 pneumococci vaccine prepared by Dr. Bulloch. The patient's temperature went up to 101° , and he had several profuse perspirations, but the temperature next morning was normal, and Mr. Cowper reported that the whitish infiltration in the pharynx appeared diminished. A day or two afterwards, however, the throat began to feel more sore than previously.

On February 1st, 1909, I saw the patient again after nearly a month's absence. He came back looking very ill indeed, white and emaciated, with a pulse of 108, whilst his temperature was slightly subnormal. He told me that shortly after the injection of pneumococcus vaccine, nine days previously, his throat had been troubling him a good deal. On January 26th some ulceration had again appeared in his pharynx. This got worse during the next three days, and again three days afterwards the nurse found, in addition to the old ulcers on both sides of the pharynx, an ulcer $\frac{1}{2}$ in. deep on the posterior wall of the pharynx. There had also been considerable difficulty in swallowing and a good deal of pain. Three days before I saw him he had begun to improve a little, and at the time of the consultation he felt a little better on the whole. He himself attributed the aggravation to the vaccine injection.

On examination there were various fresh spots of ulceration on both lateral walls of the pharynx in the old situations, and another one further back on the left posterior pillar of the fauces. Further, there was a rather large but superficial ulcer on the posterior wall of the pharynx in the middle line below the uvula. The epiglottis was, if anything, a little less swollen than it had been when I last had seen him, but the arytenoid cartilages were not only fully as much tumefied as they had been during the worst stage before he left town, but were additionally all over superficially ulcerated, whilst the ventricular bands were either covered with some ashy-grey deposit or were infiltrated. Spraying with a glycothymoline solution did not alter the aspect. The vocal cords were free, and the voice was almost normal. The aspect of the larynx, however, was so typically tuberculous now that I proposed, and obtained, an immediate consultation with Dr. F. de Havilland Hall (also an old friend of the patient). Dr. Hall entirely agreed as to the tuberculous appearance of the larynx, and on joint examination of the chest we found some slight dullness posteriorly on the right side, corresponding to the spine of the scapula. In the same locality expiration was somewhat harsh, without any adventitious sounds being heard. We were much afraid that tuberculous infection had supervened, although, in view of the comparative novelty of the subject, we could not definitely exclude the possibility that a pure pneumococcus invasion might closely simulate a tuberculous affection. We agreed that, first of all, his expectoration should be repeatedly examined for tubercle bacilli and pneumococci, and considered, in the event of our suspicions of tuberculosis being corroborated, that a stay at a sanatorium would give the patient the best chance.

The bacteriological examination was made at the Laboratories of Pathology and Public Health, with the following result:

Tubercle bacilli are present in the sputum in small numbers; one small clump was seen. In a film stained by Gram's method there is a variety of micro-organisms present, many of them probably being derived from the mouth. Pneumococci are present in moderate numbers, and some short chains of cocci were seen.

This result was confirmed by a subsequent examination. On February 4th I made the following note:

The ulcer on the left side of the pharynx is distinctly more developed, and the two spots of ulceration have become confluent. On the right side the ulcer has again disappeared. On the posterior wall of the pharynx only the last remnants of the ulcer are visible. The left arytenoid cartilage appears to be much less ulcerated than it was, whilst the right is unchanged. The ventricular bands are less infiltrated, the vocal cords still free. Altogether a most perplexing case, the more so as his swallowing is much better, and as he has gained flesh. He does not now experience any pain on swallowing, which is, of course, quite against one's usual experience with tuberculous ulceration of the pharynx. On the other hand, his temperature goes up quite regularly to something like between 99° and 100° in the evening. Dr. Bulloch has examined his sputum yesterday, and whilst finding large numbers of pneumococci, could not satisfy himself as to the presence of tubercle bacilli. He is going to repeat his examination.

On February 6th, 1909,

The patient came, accompanied by Dr. Bulloch, who told me that all the mice which he inoculated with what he had obtained from the patient's secretion had died from general pneumococcus infection of the blood. The fact that they did not die so quickly as usual under such circumstances is due, in his opinion, first to the fact that in order to isolate the pneumococci, he had to make a culture on agar, which probably diminished its virulence, and secondly, that instead of injecting the culture into the peritoneum, he injected it merely subcutaneously; but there can be no doubt that the patient's affection, in part, at any rate, is of a virulent pneumococcus infection, as I had suspected from the first.

On the other hand, in a very large number of examinations made on two subsequent days only four tubercle bacilli altogether could be discovered by him (Dr. B.), his assistant, and a third bacteriologist, so that whilst their presence cannot be denied, it certainly looks very much as if a tuberculous infection had become engrafted upon the primary pneumococcus infection. We discussed what should be done under the circumstances. Every form of treatment—sanatorium, tuberculin injections, local treatment—seemed rather hazardous and experimental in view of the double infection, and I proposed that a consultation should be held between Drs. Kingston Fowler, de Havilland

Hall, Bulloch, and myself before a definite decision was arrived at. To this Dr. Bulloch and the patient agreed. It was further arranged that previous to this consultation fresh specimens of the pharyngeal and laryngeal ulcerations respectively should be examined by Dr. Bulloch. On this day the pharyngeal ulceration on the left side looked quite unchanged. On the right side there are again some fresh epithelial opacities of irregular form, the ulcer on the right side has almost healed, in the larynx the ulceration of the arytenoid cartilage is distinctly less, whilst the swelling remains the same. The patient has distinctly less pain in swallowing, the temperature is normal in the morning, and goes up to about 100° at night; no cough, no expectoration.

On February 9th a consultation took place between Drs. Kingston Fowler, Hall, Bulloch, and myself, in which, later on, also Mr. Bowlby joined. At the beginning of the consultation we informed Dr. Fowler of the history of the case, and Dr. Bulloch reported the extremely remarkable result he had obtained from the scrapings of the patient's pharyngeal and laryngeal ulcers which I had effected two days previously. Whilst the pharyngeal specimens were simply teeming with pneumococci without any evidence of tuberculosis, the scrapings taken from the ulcerated spots on the arytenoid cartilage contained large clumps of tubercle bacilli, sometimes 20 to 30 in one clump, such as are usually found only in vomicae, together with very numerous pneumococci. It seemed, therefore, quite evident that tuberculous infection had supervened upon the original pneumococcus infection. The patient's temperatures according to the latest charts show the characteristics of tuberculosis, being about normal in the morning and between about 99° and 100° in the evening. On joint examination of the pharyngeal and laryngeal conditions they were found to be very much as described in the last note. Even now it was curious how little the patient complained of pain and difficulty in swallowing.

The condition of the right lung had rapidly deteriorated since Dr. Hall's and my own joint examination; occasional crepitations were now heard in the supraspinous region on the right side, whilst the dullness extended to the apex of the middle lobe, and here also harsh prolonged expiration and occasional rhonchi were heard.

On discussing the case, we were unanimous in considering the prognosis as very bad, and we were also all of opinion that neither tuberculin injections nor local treatment of the larynx should be undertaken, but that the patient should go as soon as possible with his wife—who was throughout the bravest of comrades and the most devoted of nurses—to a sanatorium, where he should lead the ordinary sanatorium life, plus complete vocal rest. The patient agreed, and went a few days afterwards to the Cotswold Sanatorium, where during the remainder of his life Dr. Etlinger attended him with the greatest care and friendliest interest.

Unfortunately, the course of the disease throughout his stay, which lasted until his death on April 28th, was on the downward grade. At first, according to Dr. Etlinger's reports, there was a temporary slight improvement, the difficulty in swallowing being much relieved by applications of anaesthesin in the form of a spray, dissolved in palm oil. Local applications of nitrate of silver solution to the pharynx did not improve the condition.

On March 10th Dr. Etlinger reported that there had been a good deal of extension of the pharyngeal ulceration, which he then began to treat with applications of lactic acid.

On March 18th I went to the sanatorium to see the patient, who ever since his arrival, about a month previously, had been in bed with a temperature which lately had been varying between 100° in the morning and 102° at night. At the same time, his general health had kept up remarkably well, and, although he now had considerable difficulty in swallowing, he had actually gained 1½ lb. during the last week. His complaints referred particularly to pain in swallowing and to the difficulty of removing the abundant, extremely tenacious secretion from his throat.

On examining the pharynx I found it looking distinctly worse than when I had last seen him. The superficial ulceration and infiltration had so much spread to the right side that there was no longer any difference between the two sides. The uvula and posterior part of the gingivae had also become affected. The ulceration had not increased in depth, and the appearances now are those of a superficial white ulceration and infiltra-

tion with serpiginous edges, occupying the greater part of the soft palate, part of the uvula, the hindmost part of the gums, and—what is quite a new feature—the region of the lingual tonsil, where originally the whole affection had started. The larynx, which is not so much swollen as when I last saw it, shows the same appearance as that just described in the pharynx. The whole affection certainly does not look like an ordinary tuberculous affection. The conditions in the chest are very much the same as they were on the occasion of the last examination. There are no moist râles to be heard anywhere, nor has the dullness extended.

In the presence of Dr. Rupert Collins of Cheltenham, the bacteriologist to the Eye, Ear, and Throat Hospital there, I scraped the larynx, lingual tonsil, and pharynx, the scrapings being immediately transferred to culture tubes.

Dr. Collins's report was as follows:

From cultures made on Loeffler's blood serum, staphylococci and a small growth of pneumococci were obtained from the back of the tongue, whilst cultures made on agar-agar only showed staphylococci. The scrapings from the pharynx and base of uvula showed staphylococci and abundant growth of streptococci, whilst the cultures on agar-agar revealed similar conditions. The laryngeal scrapings on Loeffler showed a larger growth of pneumococci than that discovered in the scrapings from the back of the tongue, together with staphylococci and a small growth of streptococci, whilst on agar-agar staphylococci only grew. No examination was made for tubercle bacilli.

A subsequent report from Dr. Collins, dated March 24th, runs as follows:

Posterior Part of Tongue.—Scattered single and one large clump of tubercle bacilli, some pneumococci, and a few staphylococci and streptococci.

Pharynx.—A few tubercle bacilli and a few pneumococci.

Epiglottis.—Numerous tubercle bacilli, singly and in small clumps, numerous pneumococci, some staphylococci.

Sputum.—Numerous tubercle bacilli, a few cocci, and short bacilli.

It was evident from this that, as one would naturally expect, the two affections, which at first concerned different parts of the throat, as shown with such remarkable clearness by the result of Dr. Bulloch's examination on February 8th, should have become blended later on, seeing the close vicinity and constant opportunities of mutual infection.

From this time onwards a rapid deterioration in the patient's general health took place. The emaciation made constant progress and the temperature increased, so that during the last three weeks of his life it varied between 100° in the morning and 104° in the evening. On April 1st he was seen by Dr. Woods, of Dublin, who in a letter to me described the condition as one of great rarity.

On April 13th Dr. Etlinger reported that the difficulty in swallowing had greatly increased, and that this was probably due to the fact that the epiglottis had practically been destroyed by the disease. The patient continued to struggle on bravely against the disease. Some injections of tuberculin had been made by Dr. Bulloch's advice, but his temperature had been rather higher after them, and they were discontinued.

On April 22nd the report was that the patient had been losing ground rather rapidly, and that any chance of recovery was quickly disappearing. A patch of congestion was now noted at the base of the left lung.

On April 25th I went again to the sanatorium and found the poor patient in a very sad condition. Already on the previous day Dr. Bulloch, who had been to the sanatorium two days previously and had taken a swab from the patient's throat, informed me that this contained an enormous quantity of pneumococci and some staphylococci, whilst he had not examined for tubercle bacilli. On the other hand, Mr. Bowlby, who had been to the sanatorium on the previous day, informed me on the morning of my journey that he had been surprised at the enormous improvement in the pharynx, and partly so in the larynx, but that apparently infection had taken place at the bases of the lungs, and that the breathing was very bad.

On my seeing the patient on April 25th I was shocked at the amount of emaciation which had taken place since I last had seen him. During the last three weeks his temperature had regularly varied from 100° in the morning to 104° in the evening. He looked very grey, and his lips very cyanotic; the respirations were 30 to 36 a minute, and the pulse 150 to 160. He had to be frequently refreshed with oxygen whenever his breathing got laboured. On the other hand, the improvement which had taken

place in the pharynx was simply astounding, and even more marked than I had expected from Mr. Bowlby's report; *practically all the ulceration which has been described on previous occasions had disappeared without leaving any scar.* Only on the posterior wall of the pharynx there was still slight patchy ulceration. The epiglottis had for the most part been destroyed by ulceration, and the left half of the larynx was nearly immobile, but the laryngeal mucous membrane, which had been also ulcerated, had healed without showing much evidence of scarring. The pain in the throat had entirely disappeared, and the tenacious secretion which had for a long time been such a trouble to him was also quite a thing of the past. He coughed rather frequently, but not excessively so, and brought up white nummulated sputa, which were not fetid and showed no traces of blood. The voice was very weak—almost reduced to a whisper.

On examination of the lungs both were found to be extensively affected; rhonchi and crepitations were heard everywhere, but more particularly over the bases of both lungs, where fine crepitation predominated over other sounds, and where marked dullness was found on percussion. There was no evidence of a cavity in these parts. The mechanical difficulty in swallowing was still great. He has so far taken a fair amount of nourishment, but has several times had bad attacks of choking, and Dr. Edinger suspected that particles of food might during these attacks have entered the lower air passages, and have set up infective pneumonia (*Speise-pneumonie*), which is now present at the bases. I recommended rectal feeding, in addition to the food by the mouth, quinine and old brandy to be added to the nutrient injections, and hot poultices round the bases of the lungs.

On April 25th Dr. Mitchell Bruce went down to the sanatorium, and considered the case almost hopeless, but not absolutely so. He found the infection of the left lower lobe to be "massive" at that time, and considered it therefore not tuberculous, but due to pneumococcus infection of the nature of bronchopneumonia with pleurisy. He did not, as stated above, absolutely despair of the case, basing this slender hope upon the fact that, as the pneumococcus infection of the pharynx and larynx had yielded, there was a remote chance of the pulmonary affection doing the same.

By way of treatment he suggested regular saline injections, with brandy, to continue with food by the mouth, strychnine, and at night a little morphine with it, and of course continuation of oxygen.

Unfortunately, this treatment proved of no avail; the patient gradually sank on April 28th, and died very quietly in his sleep during the following night. No *post-mortem* examination was obtained. [2122]

Thus ended one of the saddest cases I have ever seen, and what one of his relatives wrote to me—namely, that "it seemed so hard, after so brave a fight, that all should end thus, but that the patient certainly had left behind him a memory of patient fortitude and heroic bravery, which surely must have left its influence on others"—is absolutely true.

Remarks.

The reason for describing the above case in such full detail is that pneumococcus invasion of the throat, and, more still, a combination of that disease with tuberculosis, is practically unknown. As a matter of fact, the various distinguished members of the profession who kindly lent their help in the management of the sad case, one and all stated that they had never seen anything similar. It seemed, therefore, desirable to assist further observers, and to enable them to build up a clinical picture of the disease, by describing the features of the first instance observed of such a combination in full detail. That the characteristics of pneumococcus invasion were blurred in the present instance by the supervention of tuberculosis there can be no doubt. When first the tumefaction of the larynx above described came into being, I anxiously asked myself whether it was possible that pneumococcus invasion of the larynx should thus mimic tuberculosis of that part, and during the whole remainder of the course of the disease it was a perfectly open question how much of the appearances seen in the larynx were due to tuberculosis, and how much to pneumococcus infection. On the other hand, there could be no doubt that the pharyngeal affection from first to last was

predominantly, if not exclusively, due to the pneumococcus invasion only. A proof of this is given not merely by the repeated bacteriological examinations, but above all in the fact that in the last four weeks before death occurred, the pharyngeal ulceration, which had been so long and so extremely troublesome, practically disappeared without leaving any loss of substance, a fact which is quite incompatible with the idea that the pharyngeal ulceration, too, might have been tuberculous.

One of the most interesting features is Dr. Bulloch's report, according to which the scrapings from the pharynx at one time yielded an almost pure culture of pneumococci, those from the larynx an equally characteristic culture of tubercle bacilli. This fact, I think, shows conclusively the mixed character of the infection, and, taken in conjunction with the course of the illness, demonstrates the fact that the tuberculous infection supervened upon the primary infection. Very interesting, too, is the fact that, whilst the affection clinically began as enlargement of the lingual tonsil, which for a time subsided, at a later stage of the disease ulceration and sloughing in that region occurred, and that the scrapings from the ulcerated surface in this region showed the presence of pneumococci.

With regard to the complications, which supervened later on, it is difficult, if not impossible, to say which part was played by, and how much of them was due to, each of the infecting micro-organisms. The first signs clinically observed in the chest were quite characteristic of ordinary tuberculosis. The later phenomena left it quite undecided whether the progressive changes were due to tuberculosis only, or to the combination of that disease with pneumococcus infection, whilst the final phenomena might have been caused either by "foreign-body pneumonia" (*Speise-pneumonie*) or by a sudden increase of virulence of the pneumococcus infection alone. The latter possibility finds support in Dr. Mitchell Bruce's statements.

I do not attach exaggerated importance to the statements of the patient himself, who dated the aggravation in the condition of his throat from the inoculation with pneumococcus vaccine, which was made on January 24th, but I can say positively that in this case, as well as in the first described by me, and in which also a pneumococcus vaccine was used, no improvement at all resulted from the employment of this method. The only remedy, in fact, of the very many which were used in the long course of this case which proved of any value were the anaesthetic insufflations, which, although they did not entirely abolish the difficulty in swallowing, yet materially alleviated the pain experienced during the act of deglutition. The effect of the remedy was not diminished by its long use.

It must be hoped that further contributions will shed more light upon the occurrence, pathogenesis, clinical features, and treatment of the disease, which, although hitherto undescribed, cannot be exceedingly rare, as is shown by the fact that in the course of three years 3 cases came under the notice of one single observer.

Remarks

ON

ACUTE PNEUMOCOCCUS INFECTION OF THE PHARYNX.

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THE first three months of the present year have been remarkable for the prevalence of pneumonia in Chester and the surrounding district. So striking a feature has this been in my own practice that I have been at pains to ascertain from other medical men practising in the neighbourhood whether their experience has coincided with my own in this respect, and the replies I have received convince me that such has been pretty generally the case.

With a view to gain something like an accurate estimate of the number of cases I have, with the kind permission of Dr. Thomas (Medical Officer of Health for the city), examined the returns of deaths from pneumonia in the city of Chester during the first three months of each of the years 1905, 1906, 1907, 1908, and 1909.