CLINICAL LECTURE ON PNEUMONIA.

Delivered at the Liverpool Royal Infirmary.

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GENTLEMEN,—I purpose in the present lecture to lay before you an analysis of a series of cases of acute pneumonia, which have occurred to me in my hospital practice. I have purposely not included in the series cases which have been treated by me in private practice, either alone or in conjunction with other practitioners, for the reason that such cases are not open to public criticism, and frequently cannot be observed with the same care and accuracy as are practicable with cases occurring in hospital. The experience now referred to extends over a period of more than twenty years, and includes the time from February 1861, to the present date. During that period, I have been physician to two large hospitals—first, the Liverpool Northern Hospital; and, secondly, that in which we are now assembled. Into the former hospital, a large number of seamen are admitted; and many of the cases of pneumonia which came under my care there occurred in men who were presumably in good health previous to the attack, which had come on suddenly after exposure to cold whilst doing their ordinary work on board ship. I mention this fact as, I think, it has a bearing on the question of treatment, to which I shall have to refer.

The cases number one hundred and fifteen. They are drawn up in the table which I show you, which presents the leading features of each case—viz.: the initials, the age, sex, occupation, and previous health, as far as could be ascertained, of the patient; the date of the commencement of the attack, generally marked by the occurrence of rigor; the date of admission into hospital; the side and the extent of lung involved; the frequency of the pulse; the number of the respirations; the temperature, when taken by the thermometer; the treatment; the date of convalescence, viz., of the period when all active symptoms had subsided; when the pulse had fallen to a natural or nearly natural standard, 60 to 80; when the temperature was normal, and the patient able to take solid food. The table further includes the number of days during which the patient had been under treatment when convalescence was established, and the number of days which had elapsed from the beginning of the attack; the date of discharge, and the number of days the patient was in the hospital; and, lastly, the result, with remarks on the complications of the case, if there were any.

As to the age of the patients: under 10 years of age, there were three cases; between 10 and 20 years, eighteen cases; between 20 and 30, forty-six cases; between 30 and 40, twenty-eight cases; between 40 and 50, fifteen cases; between 50 and 60, four cases; between 60 and 70, one case. Ninety-seven patients were males; eighteen females. Many of the patients were strong, robust-looking men, in whom the disease had only existed for a few days before admission, the attack being distinctly traceable to exposure to wet or cold, or both.

The list includes men engaged in a great variety of occupations. There were seamen, porters, hawkers, stewards, tailors, etc.; one is described as a gentleman.

Of the one hundred and fifteen cases, the pneumonia was single in ninety-nine; double in sixteen. Of the single cases, the right lung was the seat of the disease in forty-four; the left in fifty-three; in two cases the side affected is not noted. Of the double cases, the right lung was most involved in five; the left in eight; both equally in three; only half in two; the base in one. In five of the single cases, the pneumonia was seated in the apex and upper lobe of the lung; and of these five, four occurred on the right side. In ten cases, the pneumonia was complicated with bronchitis; in seventeen, there was pleurisy with effusion; in two, there were symptoms of gangrene of the lung—one of these recovered.

Of the one hundred and fifteen cases, six died—viz.: Nos. 7, 55, 81, 82, 85, and 112—giving a rate of mortality of 5.21 per cent. No. 7 died from the result of sudden and extensive effusion into the pleura, after convalescence from the pneumonia had set in. No 55 was admitted into hospital in a sinking state, and died within forty-eight hours; hepatitis of the whole of the right lung being found after death. No. 81 was a woman of worn-out constitution, who sank from excessive

diarrhoea. No. 82 had evidence of previous phthisis in one lung. No. 85 had gangrene; and No. 112 was a severe case of double pneumonia, in which death occurred on the third day after admission into hospital.

In reference to the one hundred and nine cases which recovered: in five cases, convalescence was established at the end of the third day of treatment; in fifteen, at the end of the fourth day; in eighteen, at the end of the fifth day; in eleven, at the end of the sixth day; in nine, at the end of the seventh day; in twelve, at the end of the eighth day; in seven, at the end of the ninth day; in seven, at the end of the tenth day; in four, at the end of the eleventh day; in four, at the end of the thirteenth day; in two, at the end of the fourteenth day; in five, at the end of the sixteenth day; in one case, at the end of the nineteenth day; in one, at the end of the twenty-second day; in one, at the end of the twenty-third day; and in two cases, at the end of the twenty-fourth day. In five cases, the date of convalescence is not noted.

The average duration of these one hundred and four cases, from the commencement of treatment to the period of convalescence, was 8.06 days.

But it is important to ascertain how soon convalescence was established from the commencement of the attack, as well as from the commencement of treatment. Most of the patients had been ill for a few days before they were admitted into the hospital.

In eighty-one cases, I was able to ascertain the date of the commencement of the attack. Of these, eight cases were convalescent at the end of the sixth day of the attack; seven, at the end of the seventh day; eight, at the end of the eighth day; six, at the end of the ninth day; five, at the end of the tenth day; fifteen, at the end of the eleventh day; six, at the end of the twelfth day; four, at the end of the thirteenth day; four, at the end of the fourteenth day; four, at the end of the fifteenth day; three, at the end of the sixteenth day; two, at the end of the seventeenth day; four, at the end of the nineteenth day; one, at the end of the twenty-second day; one, at the end of the twenty-fifth day; one, at the end of the twenty-sixth day; one, at the end of the thirtieth day; and one, at the end of the forty-third day. This gives an average of 12.02 days for the eighty-one cases. In the remaining cases, the date of attack could not be ascertained.

The result of these cases, especially when taken in conjunction with others of which statistics have been given, tend to show that pneumonia, under the present mode of treatment, is by no means a fatal malady; and that, at least in the ordinary run of hospital cases, a mortality very little, if at all, exceeding 5 per cent. may be expected.

Before I proceed to make any remarks on the treatment adopted in these cases, I wish to make a few observations on some of the conditions which characterise pneumonia.

First, as regards the pulse. I do not wish to speak as to its frequency, but its character. Speaking generally, the pulse in pneumonia, although in many cases apparently full, is wanting in firmness, and indicates a feeble arterial tension; in fact, it is essentially dicrotic, and this dicrotism has been more or less marked in all the cases in which I have taken sphygmographic tracings of the pulse. I show you tracings taken from three patients.

Nos. 1 and 2 were taken from John W. (No. 77 of the series), a healthy-looking man, twenty years of age, who was admitted on May 15th, with pneumonia of the left lung. The pulse was 90, full, but soft and compressible. The tracing No. 1 was taken on the day after admission, being the fifth of the attack. You see it is essentially dicrotic. The man was treated with five grains of carbonate of ammonia with spirits of chloroform every four hours. On the 19th, the pulse was 56, and tracing No. 2 was taken. You observe that the dicrotism is only slightly marked; that, in fact, the pulse had become almost normal in its character.

No. 1.

No. 2.

Tracing No. 3 was taken from James W., 28 years of age (No. 75), who was suffering from right pleuropneumonia in the early stage. The attack, which was preceded by symptoms of congestion of the liver,

commenced on the 22nd of April, and the tracing was taken on the 23rd. It presents well-marked dicrotism. The patient was treated with carbonate of ammonia, and six ounces of brandy daily. He was convalescent on the sixth day.

No. 3.

Tracing No. 4 shows extreme dicrotism of the pulse. It was taken from a patient who was suffering from tubercular pneumonia. The man lingered for several weeks; he was admitted on the 5th April, and died on the 16th May. He presented all the features of that adynamic form of pneumonia which is associated with tubercle. After death we found both lungs studded with tubercles; the right solidified, with small cavities in the lower lobe; the left in a state of engorgement. The dicrotism of the pulse was perceptible to the touch. The tracing was taken on the 23rd April. Stimulants and nourishment were given freely throughout the attack, but the character of the pulse did not alter except to become quicker and weaker as the case progressed.

No. 4.

The comparison of these tracings with each other may, I think, be very instructive, and may show you that, should you be in doubt in any case, the sphygmograph may possibly give you valuable assistance.

As regards temperature; before the introduction of the clinical thermometer into general use, the importance of observing the frequency of the pulse and of the respiration was insisted on, but now we also insist on the observation of the temperature; and this affords a most valuable guide as to the progress of the case. As a rule, it may be said that, in acute pneumonia, the temperature rises rapidly and reaches a high level in the early period of the attack; that for the most part the oscillations of temperature during the acute stage are not very great; that there are no marked remissions, as is the case with typhoid fever and acute phthisis. But there is a feature in the temperature of acute pneumonia which is very striking, viz., its rapid fall when what we may term the crisis arrives. I show you the temperature-chart of a case of very acute pneumonia in which this rapid defervescence is well

marked (Robert J.). From the evening of the 19th January to the evening of the 20th, viz., within twenty-four hours, the temperature had fallen six degrees; viz., from 105.4 to 99.4; and on the following morning it

was below the normal. Now although, as a general rule, whenever the temperature makes a decided fall in pneumonia, we may consider the case is practically over, it would be very rash to come to this conclusion in all cases. Indeed, we occasionally find that there is more than one well-marked fall, with subsequent rises, before the final defervescence occurs. The chart which I now show you illustrates this point very well (John W.).

When three records are given, the temperature was taken at 9 A.M., 5 P.M., and 9 P.M. On April 13th, the temperature was observed at 1 P.M., when it was at the same height as at 5 P.M.

The temperature in pneumonia reaches a high level in some cases. It rarely, however, rises above 106° in the axilla. In the series of cases referred to in the table where the temperature was taken, there is only one instance in which the temperature reached 106°. In only a small proportion of cases did the temperature pass beyond 105°; the highest recorded temperatures in cases ending favourably that I am acquainted with are 106.7° by Ziemssen, and 107° by Kocker. In fatal cases a temperature of 108.9° and 109.4° has been reached before death. In some of the worst cases of pneumonia, those which assume a typhoid character, the temperature maintains a somewhat low level—102° to 104°.

The occurrence of a prolonged and well-marked rigor as an initial symptom of pneumonia is a well-known fact. In the series of cases, it was very distinctly ascertained to have existed in a large number, but in others its existence could not be satisfactorily made out.

Although pneumonia undoubtedly has a tendency to terminate favourably after a certain number of days, by rapid defervescence, by so-called crisis, yet the duration of cases differs very materially, depending on a variety of causes; and no precise rule can be laid down with reference to the time any given case will last.

The table shows that, of the one hundred and ten cases which recovered, the largest number were convalescent at the end of the fifth day of treatment, viz., eighteen; then there were fifteen on the fourth day, and twelve on the eighth.

The table also shows that, in the eighty cases in which the date of the commencement of the attack was clearly ascertained, convalescence set in in the largest number—fifteen—at the end of the eleventh day; whilst there were eight at the eighth day, and seven at the seventh.

Some cases of pneumonia are ushered in with severe gastric disturb-

ance, bilious vomiting, etc.; whilst, in a few, the attack is preceded by a distinct attack of jaundice.

In five of the cases in the table, the pneumonia was situated in the apex and upper lobe of the lung. These cases of apex-pneumonia often present features of great interest. I have seen several of them, and they have been marked, especially when occurring in women, by profound disturbance of the nervous system. Delirium of a most violent kind, sometimes assuming a maniacal character. Usually such cases do well, but they always give occasion for great anxiety, for a pneumonia of the apex is usually an indication of one of two conditions, either of the presence of some tubercular deposit, or else of a depraved and vitiated constitution.

I now proceed to speak briefly of the treatment which was adopted in these cases. In no instance was venesection practised. Only three patients were cupped, viz., Nos. 2, 7, and 9. In only three cases were leeches applied, viz., Nos. 3, 5, and 7. In Nos. 1 and 13, leeches had been applied before admission.

In twenty cases only—twenty of the early numbers of the series—antimony was given in small doses varying from one-quarter of a grain to one grain and a half, except in two cases, Nos. 2 and 6, in which it was given in doses of three-quarters of a grain and a grain.

Mercury, viz., calomel, was not given in any case. In one case, No. 10, I gave blue pill twice a day for six days, but no soreness of the gums was produced. In no other instance was mercury given except as a purgative, in combination with some other drug, at the commencement, or during the course of the treatment.

In a large majority of the cases—in over ninety—carbonate of ammonia, with spirit of chloroform and cascarrilla, was given from the beginning of treatment and throughout the attack. For the cascarrilla, cinchona or senega was occasionally substituted.

In a large majority of cases—more than eighty—some alcoholic stimulant—wine or brandy, more frequently the latter—was given early in the disease, usually from the beginning of treatment, and continued throughout the attack. The stimulants were given at regular intervals every hour, or every two, three, or four hours, frequently with food—beef-tea or milk. In the most severe cases, brandy was given every hour, or hour and a half. The quantity varied; it rarely exceeded six ounces daily. In a few instances, it was eight ounces, and in three, twelve ounces. In some of the milder cases, no alcoholic stimulants were given, carbonate of ammonia and spirit of chloroform with cascarrilla being alone used.

In a few cases, quinine was given; and I wish to observe that I consider quinine in rather full doses a very valuable therapeutic agent in some cases of pneumonia of an adynamic type. In two cases of the series, it was given to the extent of sixteen and twenty grains daily, and a marked improvement followed its exhibition. Both these were cases in which the pulse reached 140; one was in a pregnant woman, who aborted during the attack.

Mild counter-irritation was always resorted to; large mustard and linseed-meal poultices were for the most part applied throughout the attacks; blisters were never used in the acute stage, and only occasionally during convalescence, when the matters effused into the lung were being slowly absorbed.

In every case, nutrients were allowed freely, viz., beef-tea and milk from the beginning of treatment, and solid food as soon as the patients could take it.

ST. JOHN'S AMBULANCE ASSOCIATION: DINNER TO MAJOR DUNCAN, R.A.—The members of the London Medical Staff of the St. John's Ambulance Association dined together at Limmer's Hotel, on Wednesday, October 26th, to do honour to Major Duncan, R.A., the Director of the Ambulance Department of the Order of St. John of Jerusalem in England. Dr. Sieveking occupied the chair, and was supported by Sir William Mac Cormac, Surgeon-Major Baker, and others, to the number of twenty-two. In the name of the company, the Chairman conveyed to Major Duncan the object of the dinner, namely, to thank him personally for the kind and courteous way in which he dealt with the medical men connected with the Association; to assure him that, in his work, he had the hearty co-operation of those best fitted to judge of the work, the medical staff themselves; to encourage him to continue his work, and rest contented that, whilst the work of the Association was carried on in its present well regulated form, he would enlist the sympathy of the medical profession and of all classes of the community. Major Duncan, in replying, laid the modest aims and objects of the Association before the company in his usual firm and enthusiastic way; and his speech was marked by the keen feelings of sympathy so strongly characteristic of his nature.

HYDROPHOBIA: ITS PATHOLOGY AND PREVENTION.*

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1. Morbid Anatomy.—The few observations I propose to make in this communication will have special reference to the pathology and prophylaxis of hydrophobia in man. In a series of papers contributed to the *Lancet* in 1855-56, Mr. Netten Radcliffe has published a very comprehensive account of the symptoms, etc., of the disease in 109 well reported and authenticated cases. He has also furnished us with a careful analysis of the *post mortem* appearances in 46 cases of communicated hydrophobia. The abnormal appearances consisted principally of intense congestion of the arachnoid and pia mater in the cranium and spinal canal, engorgement of the choroid plexuses and velum interpositum, a certain amount of red or sanguinolent serum and corresponding turgescence of the hemispheres of the brain, cerebellum, and central ganglia. "The medulla oblongata and pons Varolii were found injected in four cases. In one of these cases, the injection was slight; in another, it was more marked near the region of the auditory, facial, pneumogastric, glosso-pharyngeal, and hypoglossal nerves; and, in a third case, there was inflammation of the pia mater covering the medulla and pons". Much vascular injection was noted in particular nerves, as in the ulnar, "in the upper arm and axilla of the bitten limb"; in the membranous investment of the origins of the eighth, fourth, fifth, sixth, and seventh nerves. Some of these nerves resembled muscular fibre in colour and appearance, as did also the branches of the cutaneous nerves leading from the cicatrix." Again, "there were evident signs of inflammation at the origin of the filaments of all the cervical spinal nerves exposed, but not at the origin of the lumbar nerves. These observations were, in the main, confirmed at the *post mortem* examinations of the two Glasgow cases, under Drs. Dunlop and Patterson." The veins of the encephalon were distended with blood, which, in the longitudinal sinus at least, was fluid. The surface of the arachnoid was smeared with blood-tinged fluid over the hemispheres, and there were a few ounces of similar fluid in the ventricles. Portions of the nervous system, the cicatrix and skin around, with the corresponding nerve up as high as the elbow (patient bitten in left ungual phalanx, etc.) were preserved and hardened in alcohol and chromic acid solution. (1) In the vicinity of the cicatrix, and about an inch around it, the skin and its subjacent fat "were infiltrated with round cells, which in some parts were so abundant as to have caused absorption of the fat, the adipose tissue being replaced by round cells" (Dr. Joseph Coats, *Lancet*, February 3rd, 1877, p. 162). Dr. Coats further remarks that, in some of the blood-vessels, there was disintegrated blood-clot, and a "peculiar condition", consisting "in a production of clear, transparent, globular bodies, which look like drops of an exuded fluid, just inside the blood-vessels along their internal wall". (2) Dr. Coats also found, at very frequent intervals, "an accumulation of round cells in the perivascular spaces of the medium sized vessels" of the encephalon. The extent of this lesion was not uniform or continuous. "In some sections, there were, at one side of the vessel, a few corpuscles lying loosely outside the wall. From this there were all degrees of the lesion, till, in some specimens, these bodies formed a thick mantle around the vessel, lying in masses several rows deep. This lesion was not confined to the medulla oblongata, but existed in the spinal cord as low down as the middle of the dorsal region, and in the pons and crura cerebri. In the convolutions, it was also present in a very minor degree." Round cells of the same sort were discovered around many of the ganglionic cells and in the territories between them, in some instances in such numbers as to completely bury these centres of power. A number of amyloid bodies existed; and in only one of the numerous sections made, had there been any blood extravasated. The nerves of the arm and hand up to the cicatrix were all healthy.

Professor Maurice Benedikt, it would appear, had previously described somewhat analogous revelations from many examinations of rabid dogs, and one case of hydrophobia in man (Virchow's *Archiv*; *Lancet*, March 10th, 1877, p. 358). The round cells of Coats he terms nuclei surrounding the ganglion-cells, and forming here and there clear spots in the substance of the cerebrum. "He regards the clear spots as being formed by the fine molecular basement-tissue of the cerebral substance, from which the morphological elements properly belonging to it have been, so to speak, macerated out." He has further noticed hyaloid masses in the substance of the vascular walls bulging into the

* Read at meeting of South-Eastern Branch, East Sussex District.