CLINICAL LECTURES ON THE VARIETIES OF PHTHISIS.

*Delivered at the Hospital for Consumption and Diseases
of the Chest, Brompton.*

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LECTURE II.—ACUTE TUBERCULOSIS AND ACUTE TUBERCULO-PNEUMONIC PHTHISIS.

GENTLEMEN,—The second acute variety of consumption which I wish to bring before you is acute tuberculosis, the most fatal of all the forms of phthisis, which, while it is characterised by the outburst of tuberculation in the various serous membranes and in the parenchyma of the lungs and of various other organs of the body, displays so little of the localised features of phthisis, and so many of the general symptoms of the infective fevers, as to be classed by one authority,* not as a variety of phthisis, but as a fatal complication of the disease. Acute tuberculosis, however, only differs from other forms in the area of the system involved; the pathological products are identical with those of the more chronic varieties of phthisis, and it is the completeness of the self-poisoning, as I would call it, *i.e.*, the omnipresence of tubercle in the system, which gives to this form its characteristic features.

A patient is attacked with pyrexia, with cough and scanty viscid expectoration, with extreme oppression and overwhelming weakness, the symptoms much more resembling those of continued fever than of consumption. The tongue becomes red, with brownish centre, the bowels are costive; the appetite is entirely wanting; the skin becomes hot, the temperature ranging from 103 to 106 deg. Fahr., sometimes even higher, and less marked by remissions than in scrofulous pneumonia; the urine is scanty and high coloured; the pulse is rapid, varying from 120 to 140. Sordes appear on the lips and teeth. But the most prominent feature is the marked dyspnoea, the respirations being 40, 50, and 60 a minute; and even the countenance testifies to the obstructed state of the breathing. The patient wastes rapidly, and is often delirious.

Physical examination of the chest shows marked resonance over the anterior surface, and a lesser degree of the same over the posterior surface. The natural respiratory sound is everywhere replaced by bronchitic rhonchi and fine crepitus, the latter, though fine, being more scattered in character than the crepitation of croupous pneumonia. In spite of all remedial measures—and a long list of strong ones is generally tried on these unfortunates—the breath grows shorter and shorter, the face and nails become livid, the prostration increases, clammy sweats break out, the sounds in the lungs become more and more liquid, the patient grows weaker, and dies, often of apnoea, owing to the great pulmonary obstruction. When death supervenes in this way, the temperature falls considerably some time previously, and a morning record of only from 95 deg. Fahr. to 96 deg. Fahr. is often recorded, though the evening one keeps up to the last.

Frequently, however, other organs besides the lungs are attacked, though generally secondarily to the lungs. The patient complains of severe headache, is seized with vomiting, becomes excited and delirious; has twitching of the extremities, squinting and double vision, though not necessarily any loss of power; the pupils are somewhat contracted. Ophthalmoscopic examination shows the fundus oculi to be congested, and sometimes detects granulations. Then follow the symptoms of effusion into the ventricles; the pupils are dilated, the patient becomes comatose, passes motions under him, and cannot pass water, which has to be drawn off, or, on the other hand, he passes it unconsciously, and he gradually sinks, the temperature falling rapidly before death, and the pulse becoming very weak. Or the abdomen becomes the seat of mischief. Diarrhoea sets in, accompanied by vomiting and marked tenderness, the diarrhoea being uncontrolled by any kind of treatment; the tongue is red and glazed, the pulse rapid, the temperature very variable, emaciation continuous, and thirst great. The stools are loose, and sometimes contain blood, and we have the symptoms of ulceration of the intestine with or without peritonitis.

Post mortem examination of cases of acute tuberculosis shows the lungs disseminated with fine miliary tubercle, grey and white, the

granulations being generally soft and easily squeezed out, showing their recent formation. Sometimes they are aggregated and present centres of caseation, and sometimes, where the outburst is extensive, the lungs seem to be packed full of these nodules, so as to offer the appearance of consolidation. In these cases, the intervening tissue is hardly visible, and section of the lung shows a greyish surface with numerous yellow centres. When, however, it is visible, we find a great variety of conditions in different patients. In some, it is in the stage of simple engorgement; in others, in that of red hepatisation; in others, again, it is highly emphysematous. The pleura is the seat of fine glistening granulations, and the bronchial glands are swollen and hardened, while under the microscope we distinguish in all these lesions a large amount of adenoid hyperplasia. Where the symptoms have indicated abdominal complications, we find fine granulations scattered throughout the peritoneum and its various processes and involutions, especially on the under surface of the diaphragm, in the great and small omenta, and on the peritoneal surfaces of the liver, pancreas, and spleen. In the intestine, we may find fine miliary tubercles in the solitary glands and in Peyer's patches standing forth in bold relief from the mucous surface, or more commonly the well known tuberculous ulcers of various sizes and shapes, with thickening of the peritoneal coat in their neighbourhood.

Where tuberculosis has involved the meninges of the brain, the appearances are very characteristic. In addition to flakes of lymph on the hemispheres, fluid in the ventricles, and softening of the adjoining structures, we find granulations, varying in size from a pin's head to a millet-seed, sprinkled over the surface of the pia mater and its various and numerous processes, the choroid plexus, etc., and invading the optic disc. The hemispheres are gorged, and there is considerable arachnitis and effusion of lymph at the base of the brain, and especially in the neighbourhood of the circle of Willis, the fissure of Sylvius, and the longitudinal fissure, and following the course of the vessels.

Acute tuberculosis is sometimes primary, sometimes secondary. It supervenes on various fevers, on old scrofulous disease of various organs, or on chronic phthisis. We have lately had a good instance of this last form—*viz.*, acute tuberculosis, supervening on chronic phthisis, in which the brain was the seat of outbreak, and, as the notes have been most carefully recorded by my clinical assistant Dr. Ritchie, it will be profitable to give the case in full.

Anne Charlotte D., aged 17, single, by occupation a teacher, was admitted into my wards on May 1st, 1877. *History.*—Subject to winter-cough for years. Cough continuous now for six months, accompanied at first by yellow expectoration, night-sweats, and emaciation. For the first four months, she suffered from dyspnoea.

On admission, she complained of great lassitude. Her aspect was pale, but she was not very thin. Cough hacking, rather troublesome, and with little or no expectoration. Tongue coated; bowels regular; appetite fair. Catamenia absent for four months. Pulse 80. *Physical Signs.*—Dulness existed over the whole left chest, most marked over the upper half, which was somewhat flattened. Cavernous sounds were audible from the first to the third ribs; scattered crepitation was heard below and also over the whole posterior region on the left side. Tubular sounds in the first interspace on the right side. Weight 7 st. 2 lbs.

The evening temperature was taken on May 3rd and 4th, and each time found to be 101 deg. Fahr. The temperature was noted five times daily—*viz.*, at 8 and 11 A.M., and 2, 5, and 11 P.M.—the observations being taken in the mouth, and continued for eighteen days, from May 11th to May 28th inclusive. The course was somewhat irregular, and, on the whole, more febrile, the evening observations ranging from 98 deg. to 101 deg. Fahr., but rarely above 100 deg.; the morning, especially at 8 A.M., falling to 98 deg., 97 deg., 95 deg. Fahr., and on one occasion to 93 deg. Fahr.

During the first month of her stay in the hospital, with the exception of diarrhoea lasting two days and slight hæmoptysis, she improved and gained three pounds in weight, and became stronger. On May 22nd, while the temperature was still low, the blood was examined microscopically, and found to contain large granular masses varying in size from three to seven times the diameter of a leucocyte. The leucocytes and the red globules were normal.

June 18th. She continued to gain weight; but her cough was worse and expectation had increased; dry crepitation with friction-sounds were audible over the lower left front chest.

July 17th. Patient gaining flesh, and cough not so troublesome; expectoration slight. She complained of severe headache. *Physical signs.*—More flattening on the left side. Cavernous sounds were audible in front as before; but, posteriorly, coarse crepitation was heard over the upper half and gurgling at the angle of the scapula. Right side quiescent. The blood was examined; no granules could be detected.

* Dr. R. Douglas Powell, *Pulmonary Consumption.*

The patient complained of great pain in the lumbar region of the spine, and there has been slight menstrual discharge.

July 23rd. The patient still complained of headache and sickness, and had vomited several times. The temperature had risen slightly, being at night 100 deg. Fahr. The patient's manner was strange and variable; sometimes very apathetic and at other times excited and violent, and occasionally she was incoherent. She complained of pain in the cervical region. She slept a good deal. Tongue white and indented; appetite bad; bowels open; pulse 100; urine passed involuntarily. No photophobia. Pupils normal and responded to light. Ophthalmoscopic examination showed nothing abnormal in the fundus oculi.

July 24th. She had been delirious for three hours in the night, muttering and singing; was now semi-comatose and recognised no one. No photophobia; pupils normal; jaw clenched, and she apparently had dysphagia; was fed by nutritive injections. Uneasy twitching of the hands. Six leeches were applied to the back of the neck, and a soap injection administered. The leeches drew well, and the patient also had epistaxis. The bowels acted freely. Pulse 120; respirations 45.

July 26th. The patient was better, and took nourishment by mouth freely. She was quite conscious, and recognised everybody. The blood was examined, and contained granules and granular masses in abundance.

July 28th. She was delirious, and had had no sleep. The urine was passed as before. Pulse 135; respirations 40; bowels open.

July 30th. She was constantly muttering to herself and picking at the bed-clothes. Last night, she was much excited and bit her hand. Consciousness was decidedly less. The conjunctivæ were less sensitive; the pupils variable, but for the most part dilated. Jaws firmly closed. The patient could not be roused from stupor. Bowels open. She took food. Pulse 140. Ordered four leeches to the neck.

July 31st. Free bleeding from the leeches was followed by a short sleep. The patient was extremely restless and constantly moaning. She vomited once. She took food, and the bowels were open. Ordered ice-cap to the head.

August 1st. She had convulsive twitching of the muscles of the neck and face, with some lividity. She was sensible at times to-day, and put out her tongue when required to do so. She took liquid food; slept very little, and her face was always turned to the left. The bowels were not open. The abdomen was tympanitic. She vomited this morning.

August 2nd. She was moaning and almost entirely unconscious. The pupils were dilated and responded very little to light. The urine was drawn off; its specific gravity was 1025; it was acid, and contained no albumen or sugar. The conjunctivæ were hardly sensitive.

August 3rd. She appeared more unconscious; had had several convulsive attacks; these consisted of a drawing down of the angles of the mouth and a contraction of all the muscles attached to the hyoid bone. The respirations varied greatly in number, and were attended by moaning, and sometimes by a gurgling sound. When spasm came on respiration almost ceased. The chest-movement was very slight; little or no air passed in and out. The spasms lasted about fifteen seconds; the muscles then relaxed and breathing became rapid and shallow, with slight flapping of the dependent cheek.

August 4th. She was more comatose; the convulsive attacks were more frequent; the pupils were dilated; a shallow ulcer had appeared on the right cornea. The urine was passed involuntarily, but the bladder was not distended. The labia majora were enlarged. She died at 3.50 P.M. of coma.

The temperature record, which was carried on five times a day as far as practicable, did not, even in the periods of great excitement, manifest any marked rise; the few high temperatures were apparently occasional and very fitful in occurrence. The course was, as a rule, normal, occasionally subnormal. The average of the ten days preceding death was as follows:—8 A.M., 98.8 deg.; 11 A.M., 99.6 deg.; 2 P.M., 99.9 deg.; 5 P.M., 98.9 deg.; 9 P.M., 99.4 deg. Fahr.; the maximum being 102 deg. Fahr., the minimum 97 deg. Fahr.

Autopsy, six hours and a half after Death.—Permission could only be obtained to examine the brain. The calvaria were thin; the convolutions were flattened; the superficial vessels were congested; both ventricles contained slightly turbid fluid, not exceeding an ounce in quantity; the septum lucidum and commissures of the third ventricle were softened and almost diffuent; the puncta vasculosa were very distinct. The pia mater at the base of the brain contained numerous fine granulations, especially the processes in the longitudinal and Sylvian fissures. The granulations were about the size of a pin's head, and crowded close on each other; the arachnoid was thickened and very opaque. In the neighbourhood of the pons Varolii, there was a thick layer of plastic lymph completely concealing the basilar artery and circle of Willis and all the structures contained therein. Processes of the

lymph could be traced in the Sylvian fissures; the lymph-masses in the transverse fissures joining formed a well marked process, which extended for about two inches along the middle line of the cerebellum, on its upper aspect.

This patient exhibited a larger amount of cerebral disturbance than I have usually noticed in acute tuberculosis, and this may be accounted for by the hemispheres and medulla being early affected, as shown by the delirium and stupor preceding the convulsive twitching of the extremities and spasms of muscles which are generally referred to affection of the membranes. The loss of consciousness was gradual, and great improvement followed the first application of leeches, which unfortunately did not appear when the experiment was repeated. The temperature is worth notice; for, though Dr. E. Long Fox,* in his admirable *Clinical Observations on Tubercle*, states that the temperature in meningitis seldom rises above 102 deg. Fahr., many physicians hold that the supervention of tubercular meningitis necessarily raises the temperature very considerably. In this case, we have during the period of greatest excitement a record very little above normal and often below it.

In most of these patients, the supervention of meningitis is very obscure, and twitching of the muscles, with a certain degree of stupor, are the only symptoms to draw attention to the important change. In one case under my care, the first symptom was bladder-paralysis, which continued to be the sole indication for some days of brain-mischiefs, though the usual impairment of sensation and convulsions followed at a later date.

Acute tuberculosis, when secondary, may be considered to arise from some infective centre in the system, whether a caseous mass in the lungs or in some gland, or a vertebral abscess, or an ulcerating intestine, or necrosis of some bone, as in the bones of the skull after scarlet fever, and resembles in its origin pyæmia, though it differs very greatly from that disease.

The diagnosis of acute tuberculosis is not always simple, as it is sometimes mistaken for typhoid fever, and sometimes, on account of the early physical signs, for capillary bronchitis. From the former it is separated by the development of the lung phenomena, from the latter by the higher temperature and the progressive emaciation.

The prognosis is hopeless. The duration varies from a few days to a few weeks. This is true of acute tuberculosis, but I do not intend to include under this heading the duration of chronic consumptive cases, in which tuberculosis suddenly supervenes, as here the date of the tuberculosis, and not that of the primary symptoms of phthisis, should be regarded as the beginning of the fatal illness. The mode of death varies greatly in many patients; where the eruption of miliary tubercle in the lungs is rapid, death takes place by apnoea through pulmonary obstruction; in others, where diarrhoea comes on, death occurs by exhaustion; and, where tubercular meningitis appears, coma closes the scene.

The treatment must be that of symptoms, as we know no agent to stem the tubercular outburst. The dyspnoea may be relieved to some extent by measures calculated to relieve congestion, such as linseed and mustard poultices, and by ether and ammonia draughts. The meningitis and cerebral congestion admit of temporary relief by leeches and by blisters; but it may be safely stated that we can only comfort the patient, and not arrest the disease.

Acute tuberculosis contrasts in the following points with the subject of our last lecture; viz., scrofulous pneumonia. 1. In the dyspnoea; 2. In the absence of expectoration; 3. In the physical signs; 4. In the smaller tendency to breaking down of the pulmonary tissue; 5. In the fact of other organs, such as the meninges of the brain and the peritoneum, becoming affected.

The third acute variety is *acute tuberculo-pneumonic phthisis*, which may be described as a link between the first two varieties—scrofulous pneumonia and acute tuberculosis—as it presents some of the clinical and pathological features of each. It resembles the latter in so far that tuberculation takes place rapidly in the lungs, and sometimes involves other organs, as occasionally, the intestines; it resembles the former in the fact of a pneumonic process being also present, and excavation soon following on consolidation. The pathological differences it presents when compared with the other acute varieties are:—1. The tubercle is aggregated and tends to rapid caseation; 2. The cavities are formed by the breaking down of tuberculous masses in the lung, and not, as in scrofulous pneumonia, through a breaking down of the pneumonic products. Whilst, however, excavation is taking place in one part of the lung, fresh tuberculation may be proceeding in another, and total disorganisation of the pulmonary area soon takes place.

After death, we find in the lungs large tracts of catarrhal or croupous

* *St. George's Hospital Reports*, vol. iv, p. 87.

pneumonia surrounding small and large racemose masses of aggregated tubercle. These masses are generally more or less yellow in colour from the process of caseation, and present in some parts excavations of evidently recent date. Scattered miliary tubercle is generally present, though the aggregated form is more commonly met with. In this variety, we find occasionally ulceration of the intestines and the presence of tubercle in the solitary glands; but the serous membranes are free.

The clinical symptoms may be described as those of chronic tubercular phthisis in an exaggerated form. The cough is very troublesome, and is early accompanied by large expectoration; anorexia is generally present; the tongue varies, but is sometimes red and irritable in appearance, and, as may be seen in the following case, diarrhoea often occurs. The pulse is rapid, varying from 100 to 130, and the respirations are hurried and count between thirty and forty.

The temperature is distinctly pyrexial, with occasional but rare periods of collapse, the high figures being maintained more uniformly towards the end than is the case in scrofulous pneumonia, the reason probably being that excavation is accompanied by fresh tuberculation even during the last weeks of the patient's life.

Let us take an instance of this form.

Maurice A., aged 22, married, was admitted into the South Branch of the Brompton Hospital on April 7th, 1874.

History.—He had lost several maternal aunts, of phthisis. He had suffered from general weakness and prostration for eight months, and for the last four had had cough, with expectoration, accompanied by loss of flesh and night-sweats. He complained of pains in the back and indigestion after meals. His aspect was very anæmic; cough troublesome; expectoration mucopurulent; tongue furred; appetite moderate; weight 9 st. 7 lbs.

Physical Signs.—Dulness, flattening, and cavernous sounds were detected on the right side as low as the fourth rib.

April 30th. He had gradually become worse; the temperature and pulse had risen and the appetite had fallen off. He had lost three pounds in weight. In addition to the above signs, crepitation was audible under the left clavicle, and tubular sounds in the second intercostal space. He was transferred to the main hospital and confined to bed.

May 8th. The cough was worse; the temperature, which was taken five times a day, was 100 deg. Fahr., except at 8 A.M., when it fell to 98.4 deg. Fahr.; the respirations were 30; pulse 104. The crepitation-sounds had increased in extent on the left side, and cavernous sounds were audible below the fourth rib, on the right side.

May 24th. He had wasted considerably. Slight diarrhoea came on yesterday, there being two or three loose motions in the twenty-four hours. The temperature was somewhat higher, being 101.2 deg. Fahr. at 8 P.M. Respirations 102; pulse 120.

June 4th. The bowels were still relaxed, motions passing twice a day. There was oedema of the left foot; no albumen in the urine.

June 17th. Weight 8 st. 4½ lbs., showing a loss of 1 st. 4½ lbs. since April 13th. He complained of much pain under the right nipple; the skin was perspiring. *Physical Signs:* On the right side, dulness was present over the upper half; dry cavernous sounds to the fourth rib; croaking sounds below. On the left side, tubular sounds were audible over the upper fourth in front; marked dulness over the upper two thirds.

June 22nd. The breath had become very difficult; aspect pale and anxious; tongue red, furred in the centre. Pulse 120; respirations 48. Crepitation was audible over the whole right side. The left leg was swollen and oedematous. There was a lump in the popliteal space, tender on pressure, due probably to plugging of the vein.

This patient died on the 26th. Below are the averages of the day temperatures from 8 A.M. to 12 P.M., taken for a period of about three weeks.

SUMMARY.	8 A.M.	11 A.M.	2 P.M.	5 P.M.	8 P.M.	10 P.M.	12 P.M.
Averages.....	99.1	99.7	100.4	100.3	100.9	101.1	101.4
No. of observations.	9	22	22	23	24	15	9

Observations were hourly taken during the night on two occasions, and the result was, that the temperature was maintained at 100 deg. Fahr. until about 7 A.M., when a distinct fall commenced, reaching as low on one occasion as 96 deg. Fahr. The greater part of the observations were, however, high.

Autopsy, twenty-four hours after Death.—Both lungs were somewhat collapsed. The right lung weighed 2 lbs. 11 oz., and was firmly adherent; the upper lobe was completely excavated; the lower and middle lobes were consolidated, with aggregations of miliary tubercle in which centres of softening were visible; the middle lobe contained a cavity of recent formation. The left lung weighed 2 lbs. 5 oz.; the pleura was adherent; the upper third was consolidated, with aggrega-

tions of miliary tubercle caseating in parts, with some small cavities, one the size of a walnut. The lower lobe contained a few grey aggregations, the rest being in a state of red hepatisation. The liver, nutmeggy, weighed 4 lbs. 7 oz. Intestines: The solitary glands of the ileum were caseous; some had broken down and formed ulcers; the cæcum was a mass of ulceration.

This case only lasted altogether six months and a half, and it may be safely affirmed that the principal changes in the lungs and intestines took place during the two months and a half the patient was under observation in the hospital. The tuberculosis of the left lung, the pneumonia of the lower lobe, the fresh miliary tubercle in the right, and the rapid extension of the cavity, were all noted during the last few weeks of life, while the regular thermometric record enabled us to compare this phenomenon with the lung-changes. The high temperature so continuously maintained was probably due to the various and successive fresh crops of tubercle being formed, and the diarrhoea to the ulceration of the cæcum, though, considering the extent of surface involved, it is remarkable that the flux was not more profuse. The prognosis in most of these patients is gloomy, as the lung-disorganisation proceeds generally to utter destruction; but, in some instances, the fever diminishes and the tubercular masses remain quiescent, during which time the patient regains strength and flesh, and may live on in a precarious state.

TUBERCULAR MENINGITIS.

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THE subject of tubercular meningitis has become invested with some special interest at the present moment by the recent Penge case, and, without presuming to offer any opinion upon the facts, far too few in themselves, observed by the medical witnesses at that trial, it is possible that a further knowledge of the clinical symptoms attached to some undoubted cases of tubercular meningeal disease in adults might engage the attention of medical practitioners.

In a previous clinical lecture upon the same subject published in the JOURNAL of January 22nd, 1876, page 97, I directed notice to two hundred and sixty-seven well authenticated cases of this affection placed in a table, from which it became easy to infer the relative frequency of the disease at different periods of life. Of those cases, 25.8 per cent. occurred in children under five years of age, 17.2 per cent. befell children between six years and ten years of age; between the ages of eleven and fifteen years, the disease became exceedingly rare, 7 cases only out of 267, or 2.6 per cent., only presenting themselves; whereas, between sixteen and twenty years of age 31 cases were recorded, and, again, a similar number between the ages of twenty-one and twenty-five, or at both periods of life respectively, 11.6 per cent. Furthermore, as life advances, not only are the symptoms attached to the disease far less distinct than when it occurs in childhood, but the malady begins and pursues its fatal course with singular insidiousness, and is frequently misunderstood even by well experienced medical men until the autopsy reveals its true nature.

The following cases which I have collected together establish my statement.

CASE I.—In June, 1867, a young woman between nineteen and twenty, comely, well nourished, fair-skinned, but having rather coarse black hair, was admitted by one of my colleagues into Faith Ward. She complained of various aches and pains. Headache was her chief trouble, and she appeared generally nervous and excitable. She had walked to the hospital from some little distance; was fatigued, answered questions precisely and rationally, but was brusque to rudeness in her manner. There was no account of vomiting; no constipation, no irregularity of pulse; but her temperature was 102 deg. Fahr., and this important fact determined her admission. She walked upstairs without assistance; became drowsy directly after getting into bed; but was easily roused up by the nurse to take her nourishment, which she swallowed without difficulty. Six hours later, she was found in a state of profound coma, out of which she could not be stirred, and, thirty hours after her admission, she died.

POST-MORTEM EXAMINATION.—The body was more than usually plump. There was a large amount of fat about the heart. Extensive pericarditis was found on both surfaces, presenting layers of thick butter-like lymph. Several whitish fibrinous bodies, like warts or papillary growths, stood out from the muscular substance of the heart, growing apparently from interfibrillar hyperplastic connective tissue roots that were deeply interpolated between the muscular bundles of the ventricular walls. Microscopical examination of them showed