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OBSERVATIONS ON A CASE OF GENERAL TUBERCULOSIS, WITH ESPECIAL REFERENCE TO THE PHYSICAL DIAGNOSIS OF THE LUNG AFFECTION.

By P. MARTIN DUNCAN, M.B.Lond., etc., Physician to the Hospital.

GEORGE SMITH, an agricultural labourer, married, and aged 25 years, was admitted under my care on November 1st, 1855. He complained of general debility, listlessness to the extreme, and of slight cough; he had led the usual life of a labourer, was not debauched in his habits, nor had he ever had syphilis or gonorrhoea. I could not find any hereditary taint in his history. He was tall, and sturdy looking; the antero-posterior diameter of his chest was small, but the shoulders were wide and straight. The most singular aspect of mental depression characterised the man; he was slow in his movements, and his hands were ever cold and purplish. The appetite was bad, tongue foul, bowels irregular, and pulse 80, small.

Examination of Chest. Little expansion was noticed over the sub-clavicular spaces, and hardly any elsewhere. The breathing was almost entirely abdominal. Deep inspiration lifted the shoulders, but made a very slight impression upon the immobile chest.

Percussion gave an unsatisfactory result over the whole thorax; its peculiar dull sound was, to a certain extent, resonant; it had a high pitch, moreover, and differed in these respects, from the sound elicited over the region of the liver.

Auscultation. The vesicular murmur was weak over the whole chest; the inspiration was not relatively decreased by any preponderance of expiratory sound; but the faint murmur, soft and in no place coarse, was only to be detected by careful listening. The expiratory sound was, for the most part, inaudible. No bronchial breathing was heard, and no râle. The heart presented no abnormal sign, either as regards its position or its sounds. There was no pleuritic or any other friction sound; the vocal fremitus was in no place exaggerated, and everywhere could be felt by the hand.

The cough was frequent, and the expectoration colourless and scanty. It consisted of colourless fluid, large epithelial scales from the pharynx and mouth, scattered flakes of bronchial epithelium, and much dark granular substance intermixed with broken-down columnar epithelium. There were no casts of the terminal bronchi.

Both testicles were the seat of chronic strumous deposit; heavy and large, they dragged upon his spermatic cords.

He was kept in bed, had milk diet, mild cathartics and febrifuges; and, during daily examinations, I could elicit no history of pleurisy or of hæmorrhage.

In about a week, a decided change took place in the percussion sound; and it was a change which made such an impression upon my mind as to induce me to watch the case with more than ordinary care. The dull semi-resonant sound altered in the strangest manner to a dull but tympanitic sound; the sense of resistance to the pleximeter

was, moreover, considerable. The soft indistinct vesicular murmur was replaced in several spots by a whiffing, wavy, bronchial breathing, accompanying inspiration, but still low in tone and soft to the ear. This sound was particularly distinct in the left sub-clavicular region, midway between the sternum and the axilla; and day after day I made careful notes of the stethoscopic phenomena over this locality. There was no increased vocal resonance. The tympanitic sound on percussion was best heard upon making a sharp tap upon the finger or pleximeter.

The cough increased daily in spite of counter-irritation and sedatives; and there was the greatest intolerance of tonics, cod oil, and such like medicines. Morphia alone seemed to relieve. The expectoration became more copious; but its microscopic characters were unaltered.

As the case progressed, the wavy, whiffing, inspiratory sound was audible enough in the above-mentioned spot on one day and inaudible on the next, being then replaced by the weak and soft inspiratory vesicular murmur. No sounds besides large sonorous râles were heard, and these ceased after the expectoration of viscid clear mucus.

Week after week elapsed, the physical signs remaining stationary; when, suddenly, vomiting, evidently of cerebral origin, set in. It was the precursor of arachnitis, and death occurred on January 1st, 1856.

Post mortem next day after death.

Body not very emaciated. Membranes and white substance of the brain very vascular; large opaque spots on the arachnoid; effusion of serum into the lateral ventricles. No tubercle.

Chest. Lungs universally adherent to the sides of the chest. The false membranes being dense, vascular, and dotted with grey granulated tubercles of the size of No. 6 shot.

The whole tissue of the lungs was more or less dotted with grey granulation tubercle: each tubercle was separated from others close by, by a space of lung tissue; and each aggregation of tubercles from others, by a greater space of lung. In the upper part of the left lung, at the corresponding spot to that so constantly examined, at least one-tenth of the whole thickness of the lung tissue was replaced by grey semi-transparent granulations; the ultimate bronchi, in many places filled with opaque granular matter, and the bronchi just visible to the naked eye, were rendered irregular in their outline and calibre, by the lateral pressure of the miliary tubercles in their neighbourhood. Careful microscopic sections of the lung tissue between the tubercles, gave beautiful preparations of the recent effusion of tubercle into the cavity of the air-cells: at least half of the air-cells were filled with a congeries of small ovoid cells, with several dot-like nuclei: and nothing can be more descriptive of their aspect, than the drawing in Dr. Radclyffe Hall's Essay, *British and Foreign Medical and Chirurgical Review*, No. xxxii, p. 467.

The microscopic sections of the grey granulations themselves gave the appearance of much homogeneous dense stroma, intermixed, especially towards the circumference, with the detritus of the fibrous tissue constituting the cellular structure of the lung, and dotted here and there with small irregular-shaped cells.

Between the aggregations of tubercles, the lung tissue gave microscopic evidences of tuberculous deposit in the air-cells, but in small amount. Fewer cells were implicated; and the deposit did not, as was the case near to the masses of tubercles, swell out all the air-cells of an intercellular space, and even fill the ultimate bronchus. As neighbour-

ing cells suffered from the effusion, their fibrous walls became softened and broken down; and here and there, this state of things could be observed.

The bronchi which suffered from the pressure of the tubercles, in contact with their outsides, presented nothing abnormal in their mucous coats. Neither fatty epithelium, casts, nor tubercle-cells were found in them. The epithelium of the ultimate bronchi of the affected air-cells was invariably broken down, and contained many free oil globules. No diseased blood-vessels were observed. The kidneys contained tubercles and cysts, and were very large and flabby.

REMARKS. The interesting features in this case were, the relation between the pathological condition of the lungs, and the physical signs during life; it being rare to find the first stage of phthisis free from complication. The great debility and nervous depression must be ascribed to the lowering effects of the tubercular cachexia; and the intolerance of cod oil and tonics is not without its value as a diagnostic. For, generally, those cases characterised by cough, debility, some alteration in the vesicular murmur and loss of flesh—the most common symptoms of the early stage of phthisis—and which do not progress unfavourably, are benefited by tonics and oils. Such is not the case with many other cases which run on to incurable phthisis: in these, sedatives are frequently the only remedies which relieve the cough and the distressing feelings of debility.

The immobility of the chest was produced by the universality of the pleuritic adhesion; and this pathological condition, in combination with the presence of so great a number of miliary tubercles visible to the eye, and so many microscopic tubercle deposits, accounted for the weakness of the inspiratory vesicular murmur.

In all probability the microscopic tubercles were deposited late in the case; and the consolidation of the majority of the miliary tubercles probably took place, instead of their softening, when the warm air of the ward, medicine, and milk diet, appeared to amend his general condition.

I feel inclined to believe that the change in the percussion sound, from simple dullness with resonance, to the dullness accompanied by a most unmistakable tympanitic sound, was produced by an access of fresh tubercular deposit; in fact, by the microscopic tubercles between the aggregated miliary granulations. For the production of this tympanitic sound is due to the presence of a certain amount of solid matter in a given air containing space: a thin layer of healthy lung placed over a surface of a body not containing air, will produce this sound; and perfect distension by air will not produce it in any body. Skoda may be consulted for the truth of these assertions; and anyone who will percuss the mid-sternum, from below the line of the fourth cartilages, will trace the dull sound of the heart merging into a tympanitic sound, as the edge of the right lung is covered by the pleximeter.

The wavy breathing had evidently a mechanical origin, and was not due to anything but the pressure of the adjacent tubercles upon the secondary and tertiary bronchi.

The absence of an increase of vocal fremitus or resonance was remarkable, and can only be accounted for, by there being insufficient connexion between the solid tubercles: on the consonance theory it is inexplicable. The microscopic preparations will be at the service of the Association Branch in its meetings in this neighbourhood.

ADDENBROOKE'S HOSPITAL, CAMBRIDGE.

CASES OF TRACHEOTOMY: IN LARYNGITIS; FOR FOREIGN BODY IN THE LARYNX; AND IN TETANUS.

By GEORGE MURRAY HUMPHRY, Esq., Surgeon to the Hospital.

CASE I. Frederick Townsend, aged 4 years, a moderately healthy child, had been observed to be hoarse for a few days previous to Dec. 22nd, 1855. On that day, it was supposed that he had caught cold, as he had some

cough and difficulty of breathing. The latter was thought to depend upon an obstruction in the throat; it increased in spite of medicines and treatment directed by a surgeon; and, on the evening of the 28th, I was requested to see him. I found him lying with his eyes half closed, breathing heavily and noisily; the noise proceeding, evidently, from the larynx. When he was roused up, the struggle for breath was greater, and the sides of the chest were drawn in by the violent action of the diaphragm. The eyes were staring, the expression anxious, and the colour of the lips livid. I was told that he had frequently very severe fits of choking, in which they thought he would die. These were very bad on the preceding night, had diminished a little during the day, but were again increasing in severity, so as to make his parents fear to encounter another night. During these strugglings for breath, the air passed through the larynx with a loud noise. The laryngeal sounds obscured all others in the chest, and rendered auscultation useless. The child often cried for water, and swallowed it without difficulty. The pulse was irregular. There was nothing wrong to be seen in the throat. The disease was evidently in the larynx, and was gaining ground. The condition of the child was critical; his strength giving way, and would probably not hold out much longer. Accordingly I recommended that tracheotomy should be resorted to without further loss of time; and, the parents assenting, the child was wrapped up in a blanket, and conveyed to the hospital. Chloroform was administered by Mr. Carver. During the inhalation, a sharp attack of dyspnoea came on, and excited some alarm; however, it gradually passed off as the child fell more under the influence of the vapour. A large vein, along the anterior edge of the right masseter muscle, approached the median line at the lower part of the neck, and rendered it necessary to keep the incisions rather higher than usual. One or two veins bled freely, so that I waited a minute or two for the hæmorrhage to subside before opening the trachea. It had not quite subsided when the longitudinal incision into the trachea was made with the scalpel; but the entrance of much blood was prevented by the quick insertion of the silver tube. After the struggling and coughing which immediately followed the introduction of the tube, the child was very pale and faint, with drooping eyelids; and the inspirations followed one another at long and very irregular intervals. However, the pulse remained good; and, by the aid of ammonia and compression of the chest when the intervals between the inspirations were unusually long, the child soon revived, and breathed freely through the tube.

The tube used was a double canula, so made that the inner tube, which was the longer, could be easily removed, cleaned, and reintroduced, without disturbing the wound, and without pain to the child. This was required to be done several times during the night, in consequence of its becoming clogged with mucus. He drank some milk, had sleep, and next morning was very comfortable, breathing easily through the tube. On Jan. 7th, I removed the tube, and, as he breathed well through the larynx, I left it out. The wound closed very quickly. On the 10th, he left the hospital quite well.

CASE II. Mr. —, aged about 35 years, rather stout, and of florid complexion, had, for nearly a month previous to my seeing him on Jan. 21st, 1855, suffered under the symptoms of some affection of the larynx, indicated by cough, difficulty of speaking, and difficulty of breathing. These increased in spite of the treatment employed, and had been accompanied lately with such severe fits of choking at night as to cause great alarm, and to induce the surgeon in attendance to suggest that an operation would probably be necessary. When I saw him, the breathing was noisy, as though the air were driven through a narrow tube; and difficult, more particularly when he exerted himself. The obstruction appeared to be in the larynx. He could speak only in a whisper, and was troubled with a dry, harsh, husky cough. There had been very little expectoration; no pain nor tenderness. He pointed to the larynx as the seat of the obstruction, and