

AN
INAUGURAL DISSERTATION

ON

Pneumonia

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BY

A. W. Hornbeak

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Pneumonia

When any organ of the system is inflamed, there results as a consequence, a general reaction, called fever. To distinguish this sympathetic fever from one which is general, or one which does not point to a particular location as its cause, it has been termed 'local phlegmasia'. Each particular organ that may be inflamed gives its name to the fever, that the precise locality of the disease may be known.

Pneumonia or Pneumonitis is an inflammation of the parenchyma of the lungs. When it is recollected, that the lungs, the great organs of respiration, are second to none in the functions which they perform in the animal economy, it is sufficient evidence of the

importance of a thorough knowledge of the disease under consideration, and in order that, that knowledge may be attained, it is indispensably necessary, that the anatomy, and physiology, of the lungs be understood.

From anatomy we learn that, in man there are two lungs, one on each side: the left consists of two lobes, the right of three: each lobe is divided into lobules, which are again divided into smaller lobules, formed of clusters of air cells. The lungs are formed of the ramifications of the bronchial tubes, pulmonary artery, and veins, bronchial arteries and veins, lymphatics and nerves: the whole of these structures are bound together by areolo-fibrous

tissue, and constitute the parenchyma or proper substance of the lungs

The Trachea, at a point opposite the third dorsal vertebra, divides into two bronchi, which enter the lungs and divide and subdivide until they finally terminate in the intercellular passages and air cells.

According to Wilson's Anatomy, the bronchial tubes, after the cessation of the fibro-cartilaginous plates, are composed of fibrous and mucous membranes, the latter being invested by a ciliated columnar epithelium.

At the termination of these tubes the mucous membrane and epithelium cease abruptly, and the fibrous membrane, very thin and transparent, is continued onwards through the inter-

cellular passages and air cells. The same change takes place in the structure of the parietes, where the air cells open directly into the bronchial tubes.

Prof. Bowling's opinion is different; he denies the abrupt cessation of the mucous membrane at the termination of the bronchial tubes, and contends that it continues not only through the intercellular passages but also through the air cells themselves.

Here is a discrepancy of opinion, which should be settled. If Wilson's opinion be true, then it is an exception to the general rule that, "mucous membranes line all those passages by which internal parts communicate with the exterior, and by which,

either matters are eliminated from the body, or foreign substances taken into it: They are soft and velvety, and extremely vascular." For example let us take the genito-urinary apparatus, which has a mucous lining from the glans penis in the male, and vulva in the female, to the termination of the tubuli uriniferi of the kidneys; extends into and through the organs of generation, into the ducts of the glands connected with them.

Let us now take a physiological view of the question and see whether it will afford any light in its solution. All physiologists are agreed that the function of the lungs is to aerate the blood, by eliminating carbonic acid during the act of ex-

piration, and to take in oxygen during inspiration.

According, to Kirkes and Pagets physiology, mucous membranes are the means by, which this process of taking-in and sending-out is accomplished. Without more light we must acknowledge that we are unable to see the necessity of this abrupt cessation.

Pneumonia is called single or double according, as it affects one or both lungs. Double pneumonia is comparatively rare. The right lung is more frequently attacked than the left. The whole lung may be inflamed, but generally only one of its lobes is affected, when it is called lobar; or one or more of its lobules may be involved when it is called

lobular. Those minute ramifications of the bronchial tubes which are sent to the diseased part, are always inflamed: hence bronchitis is a constant complication of pneumonia. Again if the inflammation reach the parietes of the lung, the pleura its investing membrane will also be inflamed, and this latter complication is denominated pleuro-pneumonia.

Pneumonia consists of three distinct stages when permitted to run its course. The first is that of engorgement, in which the substance of the lung, is gorged with blood or bloody-serum, imparting to it externally a dark red colour.

It crepitates less under pressure than the sound lung does. The air cells are not completely obliterated in this stage,

for they still contain a small portion of air, which is evident from the fact, that the lung will still float upon water. When the engorged portion is cut a considerable quantity of reddish and frothy serum flows from it. Its consistency has been diminished until it is much more easily torn. From its colour and consistency, the name splenization has been given to this first stage of the disease. In this stage of engorgement the mucous membrane of the small air vesicles is of a deep red colour.

If the inflammation continue it reaches the second stage, which is that of consolidation. The air cells are now completely filled with the secretions and as they contain no air will sink in water.

It is still red but does not crepitate under pressure; Its spongy character is lost; If its surface be cut it resembles a cut surface of the Liver; hence the term hepatization of the lung.

In this as in the first stage, if an incision be made into the surface of the lung, and moderate pressure applied, a red fluid will flow out; but much less as respects quantity, and it is not foamy.

Notwithstanding the hepatized lung is more dense and solid, it is nevertheless more friable; more easily crushed and broken down than in the stage of splinization. This condition is the result of the softening of the areolo-fibrous tissue.

If the entire organ be involved, collapse

will not follow the laying open of the chest, as the air cells and small bronchial tubes are filled with fluid instead of air.

So great in many instances, is the congestion of the blood vessels, and the effusion into the interstices, that the surface of the lungs is marked by the ribs

The third stage, denominated gray, hepatization or purulent infiltration, differs from the second, in being of a reddish yellow, or straw, or crab, or stone colour; or with black pulmonary matter: its consistency, is still diminished. It contains pus in this stage, instead of the bloody serum of the first and second

The signs by which these different stages may be recognised are divided

into physical and rational. In the first stage the crepitant roushus is heard: This the smallest of all conceivably small noises, has been compared, to that produced by throwing fine particles of salt on coals of fire or a heated shovel: to the foalding of parchment; or to that of rubbing a lock of hair between the finger and thumb near the ear.

This small crepitation does not last long in any part of the lung: it becomes less and less distinct until it is not heard at all. If its place be taken by the respiratory murmur, resolution is established: but if the natural sound is absent, it is sufficient evidence that the second stage will be developed.

The characteristic sound of the second

is a whipping, sound, like that produced by blowing through a quill.

This is called bronchial respiration.

It is not heard in health, during inspiration or expiration, from the fact, that the bronchial tubes are surrounded by air cells which are between them and the ear: these air cells are continually being filled and emptied, producing the natural respiratory murmur, which drowns it.

But as the spongy texture of the lung is now filled up with a fluid, it prevents the natural murmur, and at the same time renders the lung, capable of conducting this whipping, blowing, gusty sound of the breath, as it rushes through the bronchial tubes.

In this condition of the lung, there is most generally, another very important auscultatory phenomenon: it is the voice of the patient as it ~~enters~~ descends in the bronchi, and conveyed to the ear in the same manner as the bronchial respiration: It is best compared to the voice of one speaking through a tube. It is different ^{from} the ^{same} voice heard on the sound side. This is termed bronchial voice or bronchophony.

If the patient is to recover from this stage, the infiltration will be so diminished, that the air again enters the intercellular passages and air cells, producing the small crepitation: but if it passes into the third, there will be no crepitant roushus: this is only a negative sign: The only pos-

itive sign in this stage is a peculiar mucro-crepitating roushus, first heard at some points, and then in the whole of the affected part.

The disease is generally ushered in with a chill, followed by fever; immediately preceding, or following pain, more or less severe, is felt, in the side, breast or back. If the pain be very severe complication with pleurisy, may be inferred since the true lung pain is rather dull, and often referred to the epigastrium. Respiration is quickened: pulse accelerated: the cough is at first dry; but soon attended with bloody expectoration: the sputa is very tough and tenacious, adhering to the bottom of the vessel, even when it is inverted:

The colour is compared to rust or brick dust: it is owing to the thorough admixture of mucous and blood. Headache is rarely absent, owing to deficient aeration of the blood in the brain. The blood when drawn presents a cupped appearance. The decubitus is generally dorsal, with the head and shoulders elevated.

The duration of the disease is very uncertain. If it does not advance to the second stage, convalescence generally commences about the end of the first week; if it reaches the second stage, convalescence may commence about the second or third week; but if it goes into the third stage the period of recovery will depend upon the constitution

of the patient, and the amount of tissue involved

Pneumonia is dependent upon one or more of the three diatheses—phlogistic, malarial and typhoid: each of which should be understood in order to the successful treatment of the disease

If the inflammation be purely phlogistic, the treatment must be purely antiphlogistic: and as blood-letting stands prominent in this class of remedial agents, the lancet should be used freely, and aided, if necessary, by cups and leeches. After venesection a purgative should be administered: a very good one for this purpose consists of calomel and jalap, each ten grains, combined with one grain tartar emetic.

The bowels should be kept in a soluble condition throughout the disease by laxatives. The action of the heart and arteries, should be kept under subjection by Digitalis and Tartarized Antimony.

If the disease advance to the second stage, the patient should be slightly ptyalised with small and repeated doses of calomel and opium. The Iodide of Potassa administered every three or four hours in three grain doses, has been highly recommended after ptyalism has been induced, provided there still remains dullness on percussion.

In the third stage but little can be done; further than sustaining the strength.

In Malarial Pneumonia Quinine & Opium take the place of the lancet

and tartarized antimony in the Phlogistic variety; yet the latter remedies may be sparingly used provided they are indicated.

In the Typhoid variety stimulating expectorants should be given, and the strength of the patient husbanded from Alpha to Omega.