

AN
INAUGURAL DISSERTATION

ON

Pneumonia (per se)

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To
W. K. Bowling M. D.
Professor of Theory and Practice of Medicine
In the University of Nashville
This Essay
Is

Respectfully Inscribed
By
His gratefull pupil
The
Author

Pneumonia, (per se)

Is an inflammation of the parenchymatous structure of the lungs. There are three well marked stages of the disease corresponding to the different periods, and degrees, of inflammation in this viscus

The first stage is that of engorgement or congestion; the lung is of a dark red colour externally, it is more dense, heavier than natural, but still floats upon water, also to some extent inelastic, retaining in some degree an impression made by the finger. When cut presents a red surface, from which a reddish frothy serum flows, and also crepitates under pressure. Its cohesion is much diminished, and it is easily torn like the spleen, hence

the term Splenization of the lung has been given to this stage of its inflammation; In this state of engorgement the mucous membrane lining the small bronchial ramifications is of a deep red colour.

The second stage or that of hepatisation, is characterized by a still further alteration in the lung, and all of the different phases of the first stage are aggravated. There is still greater congestion and effusion into the vesicals and minute bronchial tubes, and into the areola tissue; The matter effused is either blood or fibrine. When cut it presents sometimes a uniform red colour, at others a slightly mottled or variegated appearance, as if granular in structure,

but the spongy character of the organ is lost, it is evidently consolidated. and the cut surface much resembles the liver, Hence the term hepatization given by most authors to the altered condition of the lung in this stage of the disease. There still flows out from a newly cut surface, when pressed, a red fluid, but much less in quantity, than in the first stage, which is not so foamy, and in which when carefully examined may often be detected some traces of a thicker and yellower matter, the first indication of commencing suppuration. The lung is denser, and more solid than before, and readily sinks in water. also more friable, and easily broken down; which results from

a softening of the areola tissue which holds the structure together. The torn surface of an hepatized lung if submitted to the field of a microscope, it appears as if the tissue was composed of a crowd of small red granulations, lying close to each other of which I have never seen any explanation given. If the whole lung is involved in the disease, there is of course no air in it, and it will not collapse as in the healthy organ when the chest is laid open, and therefore looks like the healthy inflated with air, except in colour. The substance of the lung in this condition is generally so rotten that a moderate degree of pressure between the fingers will reduce it to a pulpy mass. The transition into the next stage is gradual.

In the third stage, or that of suppuration the pulmonary tissue, dense, solid, and impervious to air, as in the second stage, undergoes a change in colour, it presents a reddish yellow or drab colour, or it is of a greenish hue at times mottled with red, or with the black pulmonary matter. The texture of the lung is more friable and rotten than before, and when cut the matter frequently is so abundant as to ooze out without pressure and even to fill up cavities made by pressing the finger into the substance of the lung; which might readily be mistaken for an abscess of the lung of recent formation, which however is a very rare termination of inflammation in this viscus, as has been proved by

Leannee and others since his times, though it used to be spoken of a very common thing. I mean circumscribed abscesses.

We may have also gangrene in this disease, but it is almost as rare, as the formation of an abscess, and when seen it is generally circumscribed, though the whole lung is sometimes involved, It may readily be detected by its intensely foetid odor, and by its greenish brown dirty Olive, dark brown, or black colour.

When cut, the part often gives vent to a turbid fluid, of a greenish tint, and an almost insupportable smell. some of which is often expectorated, which renders the room in which the patient is confined scarcely endurable. The tissue is very soft and is sometimes converted into an offensive

putrid mass, not unlike decomposed blood.

I may also state before I take up the symptoms of the disease, that all of these anatomical characters and changes occur in a lobe, or even in distinct lobules, and they may also take place in both lungs at the same time; in other words it may be partial or general, but it does not affect all parts, or both sides indiscriminately. In the first place, it is more common on the right side than on the left, which has been confirmed by statistical investigations made by Leannee and others, Again the lower lobes, are more subject to inflammation than the upper; why we cannot tell, as others older than *us, give us no light on the subject.

We will next take into consideration the physical signs, which are of vast importance in this disease. Indeed of so-much importance, that we, though not having the power of seeing what is going on in the chest, may nevertheless ascertain the important changes, which are there transacted.

If the ear or stethoscope either be applied to the surface of the chest, over the portion of the lung that is inflamed, a sound is conveyed to the ear, from this diseased organ, which is almost equal to the voice of man, saying that I have pneumonia. In the first stage or that of congestion, this sound is of a peculiar crackling or crepitating nature, much resembling the explosions of the crystals of salt when thrown

on the five, or to the rubbing of ones
own hair between the thumb and
fingers, close to the ear. Leannee calls
this crepitant rhonchus, though most
of the modern Authors use the appella-
-tion of minute crepitation, this is one
of the sounds given out by the lung
in this disease, which may be said to
be its voice, having immediate reference
to what is going on in this viscus. It is
a sign which we cannot prize; It gives
the earliest and surest intimation that
disease has commenced in this organ.
and which tends to disorganization, and
inevitable loss of life if not arrested by
counteracting remedies. If the chest is
examined, in the earliest stage of infla-
-mation, this minute crepitation, is
heard mingled with the ordinary resic-

ular murmur, or natural sound of the lung, and indicates that the inflammation is slight, but if this minute crepitation, entirely supersedes the natural vesicular murmur, we may infer that the disease is progressing, and teaches us that it has a tendency to pass into the second stage; and that the disease is becoming serious in its nature. This peculiar rhonchus is said to be the result of air passing through liquid, from the formation and bursting in quick succession of a multitude of air bubbles, in the minute bronchi of the lungs.

In the second stage, or that of hepatization, upon applying the ear to the parietals of the chest, we sometimes hear no sound given out at all; But more com-

- mously a new sound reaches the ear,
of a whiffling nature, to which the
term bronchial respiration or bronch
-ophony is given. This sound no doubt
exists in the healthy lung, but is obscu-
-red and hidden by the rustle of the
vesicular murmur, which comes from
the minute tubes which surround the
larger bronchi. and intervening between
them and the ear. and in this stage these
small tubes are all filled up with a
viscid semitransparent matter, therefore
the lungs are consolidated, and convey
sound, as any other solid substance
would. And does convey this whiffling
hollow sound produced by the rush-
ing of the air through the larger
bronchial tubes during inspiration and
expiration, termed bronchial respiration

* hidden

to the ear. We have also another excellent diagnostic sign here, it is the voice of the patient descending into the chest, and being conveyed to the ear through the solid lungs, which sounds like the voice of a person speaking through a tube, and constitutes what the profession terms bronchophony. These two sounds are highly important to the practitioner, for they speak a most significant language in other diseases of the chest, as well as in this. And they can only be acquired at the bedside of a patient in whom they are tolerably well marked, and when once heard cannot be easily forgotten. There is also a remarkable degree of dulness on percussion in this stage of the disease, in fact the same sound is elicited as

when any other portion of the body is percused, especially if the hepatised portion is superficial, and close up to the ribs, And besides this, we will have generally in the sound lung if the whole of the other be involved in the inflammation, or in those parts of the diseased lung that are healthy, what is termed puerile respiration, which is an infallible sign that a portion of the breathing apparatus is out of order, and that the remaining portion is trying to perform the function of the whole.

This period of the disease is very critical and one of painful interest to the practitioner, as he cannot tell whether the disease will terminate in resolution, or pass into the third stage or that of puer-

-lent infiltration. Of the former, which is the most favorable, we have the same symptoms as enumerated above but in a reversed order, except that the returning crepitant rhonchus is somewhat coarser, and less regularly diffused than in the advancing pneumonia. But if it should pass into the third, which is commonly denominated by the profession, the suppurative. The diseased lung becomes infiltrated with a purulent matter, by the breaking down of its structure, and a portion of it is expectorated, air is admitted into the cavity, causing that gurgling sound heard in this stage, first at a particular point, then gradually extending over the whole of the diseased part; and is produced by the passage of air through liquid pus in the larger bronchi, and to which the profession apply the term

Cavernous rhonchus. We will next consider the general signs of the disease, some of which in themselves are of no less importance than those which we have just enumerated, and by which our fore-fathers, could almost as readily diagnose the disease, as we can at the present time with the two combined.

The disease is generally ushered in by shivering and cold sensations about the back and loins; sometimes by a marked chill, followed by fever, and at the same time, or soon after, pain more or less acute in the sides, anterior part of the chest, or behind the shoulder, dyspnoea, and cough, attended by a peculiar expectoration, characteristic of the disease.

Fever, is always present in severe cases,

and varies much in degree, at times hardly perceptible, at others very intense, attended with flushed face, pain in the head, and a weighty feeling over the orbits which sometimes overbalances the pain in the chest for the first three or four days. The fever is also sometimes ^{*}intermittent in its character, the remission occurring daily, usually in the evening. The skin for the most part remains dry, though sometimes moist with a clammy sweat, especially if the fever is of a remittent form. The pulse in the beginning of the disease, is usually weak and thready, but is generally developed by a copious bleeding, sometimes full and strong, but not much accelerated, though sometimes runs as high as an hundred and forty or fifty beats per minute in the adult. The blood when drawn from the arm

presents a very decided cupped appearance, which is founded on an increase of its fibrinous element. The urine scanty and high coloured. Tongue generally moist and coated with a whiteish or yellowish white fur, but in some cases it becomes clammy, or dry and red; Accidental diarrhoea sometimes occurs in the advanced stage of some cases, though very rarely.

Pain, more or less severe in the side, anterior part of the chest, or behind the shoulder, sometimes very acute, from which a complication with pleurisy may be inferred; since the true lung pain is rather dull, and is usually referred to the epigastrium, or the nipple on either sides. It is most severe generally in the beginning of the disease, declines by degrees, and ceases altogether before the inflammation ceases.

It is aggravated by cough, by a full inspiration, often by change of posture, and by pressure, or percussion over the part affected. It may either proceed accompany or follow the commencement of the fever, and in some cases the patient does not complain of it at all but in its stead complains of a dull aching sensation, or feeling of soreness oppression or weight in the side, anterior part of the chest, and often at the epigastrium.

Dyspnoea, also varies greatly in its degree in different cases, sometimes it is so slight, that the patient is not conscious of it, and the practitioner can scarcely perceive it, and at other times so severe that the patient regardless of what is going on around him, seems to exerting himself to the utmost extent in carrying on

respiration, is unable to lie down, and can scarcely speak, his face becomes red or pale, and is expressive of the utmost anxiety, the nostrils are expanded, and in full action, breathing much increased, even as much as forty or fifty respirations per minute, the normal number being about eighteen. At the same time there is a feeling of constriction or tightness, as if a ligature was drawn round the chest, increased by speaking or other vocal effort. From this extreme state of dyspnoea few patients ever recover.

Cough, is most always present, dry in the beginning, as in low typhoid cases, but is accompanied on the second or third day by a peculiar semi transparent viscid sputa, which is the most

characteristic sign of the disease, and as this is a sign which every one can easily recognize, it ought to be faithfully and truly described, and the cause of its production explained if possible.

This peculiar sputa, consists of a semi transparent viscid matter, in which blood is intimately incorporated; and upon which ~~its~~ colour depends. it unites in the vessel, in which it is spat, forming a jellylike mass, of such tenacity that the vessel may be turned up side down and violently agitated, without its being detached from the bottom or sides.

When we see this peculiar sputa expectorated we may almost with certainty affirm that pneumonia exists in the lungs of the patient who expectorates it. And by the different characters

presented by these sputa, we may judge of the different changes, which this viscus undergoes when in a state of inflammation. So long as we can shake this matter from side to side of the vessel, we have reason to hope that the inflammation has not passed the first stage. But when this semi transparent mass, becomes so tenacious as to be with difficulty detached from the vessel, we may infer that the pneumonia has passed into the second stage; In which, these sputa are of a tawny or rust colour, and much less in quantity than in the first stage of the disease; And if the disease still progresses, it frequently ceases to be expectorated altogether, not that matter ceases to be secreted, but that the lung is unable to throw it off; either on account of the

extreme tenacity of the matter, or its own debility. In either the former or latter these sputa accumulate in the larger bronchi and trachea, prevent the passage of the air, and thereby produce suffocation and death. And 'tis said by those who have seen these sputa in the third stage of this disease, that they have the consistence and colour of prunes juice in the beginning, but finally becomes purulent in some cases, and is expectorated. Should the disease terminate in resolution we have the characters of these sputa in a reversed order from that enumerated above.

Decubitus, is usually dorsal or on the affected side, (unless complicated with inflammation of the pleura) that the patient may have the free use of the sound lung, and if there is much oppression and difficulty

of breathing the decubitus is between that of dorsal and lateral,

Prognosis, pneumonia in the first stage may be easily cut short by proper treatment, however if the inflamed surface is of great extent, it is generally a serious as pneumonia in the second stage, but more circumscribed. The disease may also terminate in resolution, although the greater part of the lung, should be hepatized, but never in the third or suppurative stage. Inflammation of the upper lobes is also more dangerous than inflammation of the same extent in the lower, or any other portion of the lung. Difficulty of breathing, with a full pulse is unfavorable in the prognosis of this disease especially if the pulse is not regulated after bleeding. Delirium is also a very discouraging symptom, in making out our prognosis

in this disease. I have spoken of the peculiar sputa characteristic of the disease, as a prognostic sign. And I will now take up the treatment.

Our great remedy here, is the same as employed in all inflammatory diseases, especially of the lungs, - venesection tartar emetic, and mercury. Bleeding is admitted by all to be the chief, and most powerful remedy we have in subduing acute pneumonia, by it we perform two great objects at the same time. In the first place it has a tendency to check the inflammation as an inflammation, and in the next places it diminishes the quantity of blood circulating in the system, therefore a less amount passes through the lung, and thereby we keep this organ from being choked up with lymph, which

is effused by the blood rapidly in this disease we also lessen the amount of work this organ has to perform in its abnormal state, and thereby prevent the aggravation of the inflammation, from this cause.

The patient should be bled in the upright position from a large opening in the vein, and in a full stream, and the blood should flow until some sensible impression is made on the system, until the pulse becomes fuller, and until the constriction about the chest is relieved or syncope is near at hand,

And it should be repeated if the relief has not been complete, or has not been permanent. We also may sometimes take blood from or as near the part affected as we can, by leeching or with the scarificator and cupping glasses, and by

which a great deal of good is sometimes done by relieving the congestion of the parts, we cannot expect much from bleeding in the second stage. but if moderately taken, it (the blood) will diminish the force of the heart and arteries, and increase the absorbent powers of the system, and thereby insuring the reabsorption of the matter effused by these organs when diseased and also aiding the medicines given to relieve this particular abnormal state of the organ. In the advanced stage of the disease we can expect nothing from this source, therefore we want some remedy to assist or take the place of the lancet. we have one such I am sure, which is the tartar emetic. some say that calomel is equally as good, in the second degree I have no doubt, but not in the beginning

of the disease. The tartar emetic is not given here with the view of obtaining its emetic properties. but for its relevancy of action upon this particular organ. after bleeding, give one fourth of a grain of Tartar Emetic every two hours. increasing the dose one fourth every time tis given, until it reaches two grains every hour. if it should produce vomiting in the beginning of its administration, we may combine opium with it until the stomach tolerates it, and it may be continued many days without gastritis being super induced, under this plan of treatment the symptoms will often undergo a marked change for the better in the course of twenty four hours, and the Tartar Emetic always acts best when it does not produce a depression of the system, and it may

be continued some days after the signs
fail of detection, that we may ensure
that the disease will not return.

In the advanced stage of the disease mer-
cury combined with opium, will gener-
ally do good, as it has a tendency to
increase the action of the skin, relieve
the cough, and procure rest for the pa-
tient, and the mercury decreases the fibri-
nous element of the blood, thereby prevent-
ing the lung from being overwhelmed by
the rapid effusion of lymph. This combi-
-nation should be composed of calomel and
Dovers Powders, in the proportion of two grs
of the former to three of the latter, given at
first only at night, but should the disease
prove obstinate, this powder should be con-
tinued through the day, but in less
quantities, say the half of a grain of one, and

two of the others, given every three hours until the gums are slightly touched. The tartar emetic must also be kept up at the same time.

In the declining stage of this disease, the tonic expectorants, are very usefull, Those mostly used are sanguinaria seneka or squill, combined with epueac. or tartar emetic and opium or syrup of morphia. And if the patient is becoming very weak, the stimulant plan is required, carbonate of ammonia, wine whey, and quinia if there is hectic fever. And in gangrene chloride of lime and opium, and the mineral acids may be used. I should have stated that the arterial system must be quieted by digitalis or veratrum viride, if blood letting is inadmissible. As to diet, the patient should always be sustained by such food, as his case demands.

Wch 1st 1857

W. H. Procut