

THE TREATMENT OF PULMONARY TUBERCULOSIS.

The Third Lecture on the Treatment of Pulmonary Tuberculosis was delivered by Dr. Frederick Heaf, B.A., M.D., Medical Superintendent of the Colindale Hospital, Hendon, on February 5th, at the British College of Nurses.

LECTURE III. COLLAPSE THERAPY.

- (1) THREE TYPES.
 - (a) Intra Thoracic { Introduction of air, liquids or solids into pleural cavity.
 - (b) Thoracic—Plastic operations.
 - (c) Extra Thoracic—Splints.
- (2) SUPPLEMENTARY OPERATIONS.
 - (a) Cutting adhesions.
 - (b) Phrenic Evulsion.
- (3) INDICATIONS FOR TREATMENT.
- (4) CONTRA INDICATIONS.
- (5) ARTIFICIAL PNEUMOTHORAX.
 - (a) Apparatus.
 - (b) Technique.
 - (c) Complications—Immediate, Pleural Effusion—Remote.
 - (d) Air replacement.
- (6) CUTTING ADHESIONS.
- (7) THOROCOPLASTIC OPERATIONS.

This evening I wish to talk about the important subject of Collapse Therapy Treatment, which, as its name implies, is based on the principle of keeping the diseased lung at rest by allowing it, or forcing it to collapse.

If we consider Nature's method of attempting to overcome pulmonary tuberculosis we shall see that she strives to immobilise the diseased lung by adhesions or by the production of pleural fluid, or may by the formation of a large amount of fibrous tissue which reduces the elasticity of the lung tissue and so restricts its expansion and contraction.

These healing processes have been studied carefully and methods have been devised to assist in immobilising the diseased lung, and to-day we have a number of useful and highly beneficial courses of treatment which can be given in conjunction with routine treatment. Broadly speaking these treatments fall into three classes:—

- (1) The Intra thoracic Air.—Liquids or solids into the plural cavity.
- (2) The Thoracic—Plastic operations.
- (3) The Extra Thoracic { Splints.
Strapping.

All these methods aim at keeping the lung at rest and some actually forcibly compress the lung, and thereby obliterate air spaces and cavities.

Now which cases are suitable for the treatment, what are the indications for collapse therapy?

I do not think it can be stated plainer or more definitely than it is in Dr. Wingfield's book.

"If after three months' careful routine treatment a case of unilateral disease is not making such a steady progress as is judged to be normal for its type, an attempt should be made to control the progress of the lesion by a collapse of the lung."

Of course the rule must be used with a certain degree of latitude.

Some cases, owing to temperament, or rapid extension of the lesion, will require special treatment earlier than in three months, other cases which are not completely unilateral will call for collapse therapy and be greatly benefited. Such cases that have one extensively diseased lung, and about one-third of the other lung involved, may show quite a good result from the treatment. So, as I

said in my first lecture, each case must be considered individually and judged according to its own special characteristics.

There is also the case of recurrent hæmoptysis which calls strongly for this form of treatment, for not only does it often control the hæmorrhage but it reduces the toxæmia from the post-hæmorrhagic broncho-pneumonia due to the congealed blood in the air passages.

There are contra indications to the treatment which must not be ignored. These can be briefly enumerated as:—

- (1) Emphysema and bronchitis.
- (2) Old age; 50 and upwards.
- (3) Occupation and environment may make it difficult to obtain artificial Pneumothorax refills.

Before considering technique let us go through a few details of the anatomy of the thorax.

- (1) The bony casing with ribs and muscles.
- (2) The parietal pleura (sensitive).
- (3) The visceral pleura (unsensitive).

We can now see the principles of (A) *Intra pleural method* which may be by (1) Artificial Pneumothorax or the introduction of AIR in the pleural cavity; (2) Oleo thorax, introduction of oil; (3) Gelatino thorax, introduction of gelatine.

(B) *Thoracic Methods*, which aim at removing the bony wall by surgical operation known as *thorocoplasty* either complete or partial.

(C) *Extra thoracic* methods immobilising the chest wall by compression of the thorax by splints.

These procedures may be supplemented by other operations which assist in immobilising the lung, namely Phrenic evulsion or the drawing out of the Phrenic nerve, through an incision in the neck and so paralysing the diaphragm on the affected side, and also the operation of apicolysis in which the parietal pleura is stripped from the chest wall and fat, paraffin or muscle introduced to compress the lung immediately underneath.

We are now in a position to discuss *artificial Pneumothorax treatment in detail*.

Firstly the apparatus: There are a number on the market but they all are designed on the same principle and consist of two parts:

- (1) The reservoir of air or gas from which it can be released in a known quantity at a desired rate. In the Lillington Pearson apparatus this is done by means of movable bottles containing water connected by a syphon. As the water flows from the bottle A to B it slowly pushes the air out of B. In the Wingfield apparatus the air is contained in a large cylinder like a huge "record" syringe.

In my own apparatus the air is contained in a collapsible rubber silk bellow and passes through a needle valve which regulates the flow.

The second part of the apparatus consists of a manometer or pressure recorder. This gives the pressure of the air in the pleural cavity before, during and at the end of the operation. In most apparatus it consists of a U tube containing water, and the pressure is known by watching the height to which the level of the water rises and read off on a centimeter scale. In my apparatus a mechanical monometer is used which works on the principle of an aneroid barometer. Some apparatus have two manometers so that the pressure at which the gas or air is flowing into the chest may be determined.

The flow of air can be regulated by a tap and made to pass along a rubber tube to a special needle which is inserted into the pleural cavity.

There are many kinds of needles. Some used for inductions. Some for refills. They have, for the most part, a general pattern consisting of a two way piece and a tap,

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