

What is true of Cairo is probably true of many cities, particularly in hot climates. It has been suggested that if it were illegal to use sewage for manuring fields, the vegetables cultivated in them could be kept comparatively clean. But legislation in this sense would be most difficult to enforce: In the country, it is almost impossible to escape from sewage, and even animal manure can contain germs and parasites dangerous to human beings. To use only artificial manure would be a counsel of perfection. The householder is therefore driven to follow the advice given at the head of this paper: Wash your fresh fruit and vegetables in running water!

*(Communicated by the Secretariat of the League of Red Cross Societies,
2, Avenue Velasquez, Paris. VIIIe.)*

Diseases above and below the diaphragm and the value of X-Ray in diagnosis

BY MISS D. SMITH, R. N., LADY CURZON HOSPITAL, BANGALORE.

A

A pregnant woman admitted into hospital here was found to be very short of breath. The usual causes of such dyspnoea were eliminated but it was found that there was a marked dullness in the right flank which suggested at first a pleurisy with effusion.

An X-ray picture was taken, which confirmed the presence of some abnormal collection there, and it was remarked by the Surgeon-in-charge that the diaphragm appeared to be pushed up, and so the fluid might prove not be in the chest, but below the diaphragm.

The assistant punctured the swelling about the 10th Interspace behind and got only blood. The patient was therefore taken to the operating theatre, and again punctured under Novocaine. Pus was struck, but it refused to flow, even with the aid of the aspirator. A portion of rib was therefore quickly resected under more local Novocaine, and an opening made. It was found that this opening led through the diaphragm, and when opened up by dressing forceps, a cavity in the liver commenced to pour out pus in which floated innumerable small hydatid cysts. A tube was inserted through the diaphragm into the cavity in the liver, and the patient returned to bed.

You all know that the *Tænea Echinococcus* is the smallest Tapeworm that affects man. It has only three to four segments, is not more than half an inch long. Contrast this with the ordinary tapeworm which varies from 2 to 3 mm. for *Tænea Solium* to 4 to 10 metres for the *Tænea Saginata*, with hundreds of segments. The adult *Tænea Echinococcus* occurs in the dog's intestine and has a head, four suckers and two rows of hooklets. The segments full of ova are shed, and infest food, green vegetables, drinking water, whence they may be carried to man. The ova are ingested, hatch out in the human Intestine, bore their way through the bowel wall into the small branches of the portal vein. Thence they are first carried to the liver, which fact accounts for the liver being the site most affected by the *Echinococcal* cyst. The right lobe is most affected. Thence the embryos may pass into the lungs and general circulation, so that eventually a cyst may lodge in the lungs, in the brain, in the intestines, where it has been mistaken for cancer. The cyst has an outer laminated wall and an inner

soft white germinal layer bearing the Scolex heads. These cysts contain a clear Albuminous fluid with hooklets. They may eventually calcify and show therefore as dark masses in the X-ray film or they may suppurate and if in the liver become a special form of liver abscess.

Adult Worm Enlarged.



Germinal Layer.



It seemed to be rather an interesting problem to consider what other conditions might cause dullness to percussion; and opacity on an X-ray film, in the right flank, above and below the diaphragm, and to consider shortly how these are distinguishable and especially on an X-ray film.

(Showing films to illustrate the points raised.)

We must first tabulate the conditions we wish to consider :—

1. Above the diaphragm.
2. Below the diaphragm.

Do not be afraid of this list, as you do not need to remember them all. That is for the Doctor to do. But it will be of interest to us to discuss a few features of these conditions, so as to show to what a great extent the Doctor is assisted by the X-ray pictures :

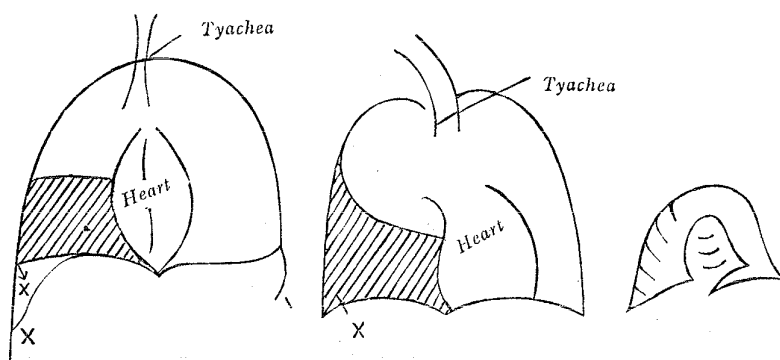
Let us divide the conditions to be considered into those

- (a) Above the right arch of the diaphragm.
- (b) Below the right arch of diaphragm.

As regards (a) there are the following conditions to consider.

- (1) Pneumonia.
 - (i) Lobar—due to Pneumococcus.
 - (ii) Influenzal—due to Pneumococcus and in some epidemics to Streptococcus.
 - (iii) In connection with Abscess of Liver.
- (2) Pleurisy with serous effusion—Empyæma.
- (3)
 - (i) Air and serous fluid in the pleura such as in Artificial Pneumothorax.
 - (ii) Air and pus in the pleura.
- (4) Abscess of lung.
 - (i) Due to a breaking down patch of broncho-pneumonia or Lobar-Pneumonia.

- (ii) Due to a foreign body inhaled into the lung.
 - (iii) The consequence of Pneumonia in a Diabetic, may be with gangrene of the lung.
 - (iv) The consequence of blocking of a Bronchus with cancer or by pressure of Aneurism.
 - (5) Collapse of Lung (generally after operation).
 - (6) A Cancerous Tumour occupying the base of the lung.
- The X-ray pictures of these have the following features.
- (1) Pneumonia. A dark patch at the base leaving *free* the lowest recess called the complemental space, trachea and middle Line.
 - (2) Pleurisy or Empyema *without* air in the pleura, a *concave* upper surface to the fluid and a filling up of the lowest recess at X. The trachea and mediasternum with the heart is displaced *away* from the effusion. This is true if patient is standing up, but if lying down, or with very much fluid, there may be no Concave upper margin.



- (3) Air and serous effusion or air and Pus (the latter called pyopneumothorax and the former often occurring after air has been introduced into the chest by *Artificial* Pneumothorax operation).
Then the upper surface of the fluid will, in the erect position of the patient, be *horizontal*, and above this will be seen the dark shadow due to air.
- (4) Abscess of Lung with consolidation around the abscess, and containing air (X).
- (5) Collapse of Lung—acute collapse after operation—Diaphragm rises, chest falls in—trachea and heart come towards the *same side* as the lesion, unlike the fluid of effusion in pleurisy.

B

We come next to the conditions *under* the right arch of the diaphragm.

- (1) *Much enlarged Liver.*
From Congestion.
„ Hepatitis (or inflammation) e.g. Malaria.
„ Liver Abscess.
„ Cancer of Liver—primary or secondary.
- (2) Echinococcus. (Hydated cyst).

- (3) Subphrenic (or Subdiaphragmatic) Abscess, due to some perforation of the stomach or bowel, e.g. Ulcer of stomach or duodenum.

Injury—e.g. Stabwound of chest and liver.

In the case of mere enlargement of the liver, the diaphragm may be raised. If the liver is painful the diaphragm may show limitation of movement during breathing, and this occurs in Abscess of the Liver.

- (4) In the stage in which the Hydated cyst is still free from suppuration the diaphragm may show a slight elevation in addition to the usual curve, and this is the boss of the Cyst projecting upwards (X).

If the cyst calcifies, one will see the walls marked out in the X-ray picture.

- (5) The Hydatid cyst may suppurate and become a Liver Abscess. In this case the diaphragm would be moved upwards towards the chest.

This might very well be mistaken for a *Pleurisy*, but if we note that the upper margin of the dulness in the picture is shaped like the diaphragm and has the curve *convex* towards the chest (unlike the *Pleurisy* where we saw it was *concave* upwards) we may avoid the mistake of imagining that a Liver Abscess in a *Pleurisy*.

Lastly, in a case of Subdiaphragmatic Abscess the plate of which was shown, from the nature of the causal conditions, air and gas (from *B. Coli* suppuration) have escaped and lie between the diaphragm and the liver. It was seen that line or curve of the diaphragm was *raised*—but under it is a saucerlike darkness (due to air) lying above the liver. This would best be seen if the patient was erect—and if the patient were laid on one side, the air would travel to the side that was uppermost and so appear in the picture to be under the lower ribs.

To sum up, we can receive much aid from the X-ray in diagnosing obscure conditions in the right side adjoining the diaphragm. The shape of the upper margin of the dark shadow in the X-ray plate may at once show us if we are dealing with a much enlarged liver or to some condition like *pleurisy* or *pneumonia*.

The pleuritic shadow is concave upwards if *air is not free* in the chest while the picture of Liver Abscess or Hydated cyst shadow is the shape only of the bulged diaphragm i.e. *convex* upwards.

(Paper read at the Annual Conference in Bangalore, at which very interesting X-ray photographs were shown.)

THE SECRETARY'S PAGE

The Four-Figure Membership

It is a slow process, working up to the goal, but a long, steady pull will get us there. There are thirteen new members this month, but Delhi has made a spurt with seven new members all at once. This is the result of a little meeting of nurses. Would it not be possible for the T. N. A. I. members in each hospital to get together small meetings of nurses to put before them the aims and objects of the Association. We shall be glad to send a supply of application forms and circulars for use at such meetings. Let us work on persistently at the attainment of the Thousand Membership.