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Hydatids of the Lung

I have chosen the subject of hydatids of lungs for my thesis on account of its frequent occurrence in the practice of every Australian Physician, & from the fact that there is still considerable difference of opinion in the method of treatment which is well likely to prove successful.

The origin of this parasite in the body is of great interest to all students of medicine, but at present we must be content with the investigations of Kuchenmeister & others, which show that there is a parasite in the intestines of the dog, which, if introduced into the human body, will develop into hydatid cysts. Some other observers maintain that a parasite which infests the liver of sheep will also develop into hydatid cysts when introduced into the human body.

The generally accepted theories at present with regard to the

introduction of the ova of these parasites into the human body, are, through the medium of drinking water to which dogs & sheep have had access, & through the medium of dust, especially in sheep drafting yards & on roads over which sheep are constantly being driven.

There seems to be some strong grounds for these theories, for sheep drovers & those engaged about sheep yards & pastoral pursuits, seem more liable to suffer from hydatids in the lung probably through inhaling the dust containing the ova of these parasites, than in any other part of the body. As these are merely theories I need say no more about them as this paper is more particularly intended to pursue the study of the diagnosis & treatment of hydatids.

We are compelled to admit that there is only one symptom absolutely pathognomonic of the existence of hydatid in the lung, & that is the presence of cysts, fragments of cysts or the hooklets in the sputa.

but as these are not seen till the second stage of the disease when microscopic examination reveals the presence of the disease beyond all doubt. we must rely upon a thorough physical examination of the chest when we arrive at our diagnosis by a process of exclusion.

The symptoms depend on the size & position of the tumor. The size seems of little importance in the early stages owing to the accommodating power of the lungs, which will allow the tumor to occupy a third or even more of one of them without causing any marked or distressing symptoms beyond a slight shortness of breath. As the growth increases we find more or less characteristic symptoms due to pressure, such as difficulty of breathing & pain on the affected side is frequently present.

Cough is invariably present, at first dry & hacking but as the tumor increases in size becomes more frequent and

paroxysmal, especially on any exertion. At this stage we generally find a dusky tint of the skin due to the impeded circulation through the lungs & consequent non-aeration of the blood & occasionally we get haemoptysis more or less severe but this is rare.

The expectoration is sometimes stained with blood but not frequently. We often ^{have} marked phthisical symptoms, as for instance, loss of flesh, occasionally night sweats, cough with more or less purulent expectoration, haemoptysis & cachectic appearance & occasionally hypervertic deformity of the fingers. These latter symptoms are more marked when the disease is complicated with phthisis, but I have seen several cases where they were all present & after tapping disappeared entirely. Dr. Waller says "The diagnosis from tubercular phthisis will in many cases probably prove impossible, unless acrophrosts or achirovesci in fragments or whole be discoverable in

the sputa," & that so long as the case remains unbroken the physical signs simply indicate consolidation.

Trousseau says that "In general patients affected with hydatids of the lung present many of the rational & physical signs of Phthisis or Chronic pleurisy. In fact the majority of this class of patients will tell you that they have been subject for a long period, to haemoptysis more or less profuse & more or less frequent, as well as to oppression of breathing."

Leffroy, Cadet-Gassicourt, Rigla, Lameunier, Dupuytren, Davaine, Richeteau, Velieard & others have written on this subject, but from the rarity of the disease in Europe & consequently having seen a very limited number of cases, not one of them has shown clearly any characteristic or distinguishing symptom by which we could diagnose with any certainty, a hydatid cyst of the lung in its early stage, & before rupture of the sac takes place.

Must, if not all observers are agreed that hydatid cysts of the lung occur more frequently in the right than in the left lung, & seem to have a preference for the bases rather than any other part. And also that there is generally only one cyst present. But this is not always the case, one or more cysts may be present in either lung & in any situation or in both lungs etc.

Dr. Walsh says that "When they originate near the root of the lung & enlarge without rupture they generally approach the chest wall in the lateral direction."

The hydatid as a rule, is imbedded in the parenchyma of the lung & it is rarely we find it situated in the pleura or mediastinum, but occasionally we do find a cyst in the pleura or in the pleural cavity, when it must probably originated in the lung substance & has been forced or dropped into the pleural cavity, as in the case related by Dupuytren

of Geoffroy.
 The cysts may grow to a great size according to the capacity of the chest, & when tapped have been found to contain as much as four pints or more of fluid, but if the patient has suffered much from difficulty of breathing & cough they seldom grow to such a size, but burst from the constant irritation either into one of the bronchi or the pleural cavity, before they have attained half this size.

There is some difference of opinion amongst observers concerning the cyst wall. Broussais remarks that "pathological anatomy has taught us that the adventitious envelope may be either very thin or altogether wanting; that an acute inflammation of the lung may cause them to burst either into the lung where they produce the symptoms of hydrothorax, or into the bronchial tubes, in which case they may be expectorated either in shreds or in their totality."

M. Kowal also says, "The absence of the adventitious cyst on the extreme tenuity of the envelope, by which the cyst is constituted likewise explains how hydatid tumors of the lung may become ruptured under the influence of an inflammatory affection of the respiratory apparatus."

And Dr. Walshe observes "that the mother accephalocyst sometimes lies in direct contact with the lung texture, & unlike that of the liver is rarely surrounded with a thick shell or cyst-like wall of pseudo areolar tissue."

Australian observers have found this to be the exception rather than the rule, except in very young subjects or where there has been little or no irritation, when the investing cyst is occasionally adventitious & thin being formed evidently by inflammatory exudation.

It has generally been noticed in this country that when the cyst attains the size of a small mandarin orange, the adventitious envelope begins to form, & that cysts which attain a large size & burst,

invariably possess a thick tough investing envelope, & the lung tissue immediately surrounding the cyst, is more or less solidified, but not irreparably so, as is shown by the complete restoration of the breath sounds after evacuation.

The physical signs of a moderately large hydatid cyst of the lung very closely resembles a case of empyema, & interlobular pleurisy, but in the latter we have a history of pain & febrile attack which is the only symptom we can find to negative pleurisy in some cases of hydatid. The symptoms we base our diagnosis of hydatid cyst on, are as follows. -

As to shape & size - the thorax is seldom altered till the cyst has attained a large size, when, according to Broussais "on examining a patient you find a globular deformity of the chest of limited extent. the probability of the case being one of ruptured hydatid is greatly strengthened."

This globular deformity is rarely seen in this country, as the case is generally diagnosed before the chest has obtained such a size as to cause the deformity. In the early stages of the disease we seldom notice any difference in the measurement of the two sides of the thorax.

2nd Vocal movements on the affected side are more or less deficient, especially that of expansion.

3. Vocal fremitus is absent in most cases over the site of the tumor.

4. Percussion reveals absolute dullness, & the area of dullness always presents a rounded outline. This area may be most accurately mapped out & is unaltered by position. Immediately beyond the area of dullness the percussion sound is perfectly normal. The general situation of this dullness is in the lateral region of the thorax, but occasionally it is situated in the infra-clavicular region.

5. Respiratory sounds are entirely absent over the area of dullness.

but are audible immediately beyond the line of demarcation though they may be harsh in character.

6. Vocal & tissue resonance are absent over the area of dulness.

7. The vibratile thrill of fluid can occasionally be detected. With the above well marked symptoms & a history of a slowly enlarging tumor in the thorax, causing little or no pain & not preceded by any marked febrile symptoms, we are led to the conclusion that we have a hydatid cyst of the lung to deal with.

Should the case not be diagnosed in its earlier stages, or neglected for some reason till it has attained a large size, we will probably find it much more difficult of diagnosis, for it may then become complicated with other diseases & we may overlook the real cause of the symptoms till suddenly the sac bursts & reveals to us the real nature of the complaint. It may be complicated with pleurisy

or with obstinate bronchitis
or with pneumonia, when we
get the characteristic sputa
which too often has misled
careless observers.

The case may burst into a
bronchus or through the
pleura into the pleural
cavity or if adhesions are
formed between the pleura
& the diaphragm, into the
abdominal cavity. According
to the manner in which
the case bursts & discharges
itself we have a train of
painful & distressing
symptoms, which often lead
to a fatal issue.

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If the case bursts into a
bronchus we are of course no
longer left in doubt as the
microscope at once reveals
the presence of the hooklets
& the shreds of the cyst wall.
It was thought at one time
the most favorable thing to
happen was for the cyst to
rupture into a bronchus &
thus be discharged, but more
extended experience teaches
us that such a result is
only too often followed by
distressing symptoms, not
unfrequently ending fatally.

13.
the patient sinking from
exhaustion.

The difficulty in accurate
diagnosis of hydatid of the
lung arises from the
great similarity in the
symptoms between it &
some other diseases as for
instance

a. Phthisis which presents
usually the same train of
symptoms especially when
the hydatid cyst is small.
And further Hydatid Cyst
of the lung & Phthisis often
coexist when it is almost
impossible to say with
certainty whether the
symptoms are due to
Hydatid or Phthisis or to
both. This is especially the
case when the cyst is
situated in the apex of the
lung. From this it becomes
very important we should
diagnose the presence of a
cyst in persons predisposed
to tubercle, for the irritation
of a cyst seems often to be
the cause of Phthisis starting
in a person so disposed.
& we have anything like
strong grounds for suspecting
the presence of a hydatid

cyst in a person predisposed to Phthisis, we consider we are justified in making an exploratory puncture, as it has been frequently proved in such cases that the progress of the phthisis has been arrested by this means.

B. Localised pleurisy & localised abscess of the lung present exactly the same symptoms as hydatid cyst of the lung, the only distinguishing symptom being in the onset of the disease which in pleurisy & abscess is invariably ushered in by fever & pain. The diagnosis is not so important in these cases as we treat them all in the same manner.

A hydatid cyst situated on the upper & back part of the liver has been frequently mistaken for hydatid cyst of the base of the right lung & it is not until tapping has revealed the bile stained fluid that the real seat of the cyst has been discovered.

() Solid tumors of the lung often present symptoms similar to hydatid cysts. If we are in doubt I think we are quite

justified in making an exploratory puncture.

Pericardial effusion has been occasionally mistaken for hydatid cyst, as it often presents exactly the same symptoms. A puncture in these cases would do no harm, if great care be taken, as was shown in two cases reported in the Australian Medical Journal. Treatment. After a correct diagnosis comes the treatment & we can lay claim to the subject being more fully investigated in this country than in any other up to the present. Very few of the European writers mention anything about treatment, & those who do simply recommend a few internal remedies, which are presumed to have the effect of destroying the life of the echinococcus, & a very few recommend puncturing but not in any very decided terms sufficient to justify an inexperienced practitioner in resorting to this mode of treatment. The majority of writers if they mention treatment at all, tell us that treatment

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is useless & the disease should
be left alone to take its
own course.

Some few who profess to have
had considerable experience
have written on the good
effects of certain drugs, such
as the Bromide & Iodide
of potassium, Kanaela,
Chloride of sodium &
Turpentine &c.

I have seen all these tried but
have seldom if ever found
any decided beneficial results
follow their administration.
With operative interference they
may assist slightly, but
without operative interference
they may be said to be
almost inert in the
destruction of rheinoccal
life. For these drugs to have
any effect they must be
given in such enormous
doses & for such a length of
time that few if any would
feel justified in relying on
them alone.

Tapping is undoubtedly the
most certain treatment, judging
from the experience of
Australian observers, & of
those European physicians
who have practised it.

Tapping should be performed in the early stages & where the cyst has not been the seat of any inflammatory disturbance. There are several items of importance in tapping which should not be forgotten. The Trocar should be very fine & not less than seven inches in length. It should be fine & made of the best steel & it is most essential that the point should be very sharp otherwise it may push the investing sac, which is often very tough, before it.

In introducing the Trocar it is advisable to make a small incision in the skin over the centre of the area of dullness, as it is at this spot we will generally find the cyst to approach nearest the surface of the thorax.

The Trocar should be thrust in firmly till fluid is met with, taking care to avoid the main bronchi & bloodvessels. After the cyst has been tapped & either partially or wholly emptied, the question arises, should

anything further be done?
 I think most practitioners
 in this country are agreed
 that nothing further should
 be done of the operative
 character, for any further
 interference, such as
 injecting parasitic fluids,
 passing galvanic currents
 through the cyst, or leaving
 in a drainage tube, only
 tend to convert a simple
 into a dangerous operation.
 Generally one tapping is
 sufficient & it is very seldom
 we find a cyst refills.

The after treatment consists
 in keeping the patient perfectly
 quiet in bed for about a
 week, & administering some
 of the drugs previously
 mentioned, for two or three
 months.

A few cases have been recorded
 where in tapping, the Trepan
 has pierced through a
 bronchus & after a few ounces
 of fluid have passed through
 the cannula, the fluid suddenly
 bursts into the pierced bronchus
 & causes the most violent
 paroxysmal cough, followed
 by expectoration of cysts &
 fluid, which might result

in suffocation.
 This fortunately is of such
 rare occurrence that it
 should not prevent us doing
 the operation, especially
 in cases which are diagnosed
 early, & as those reported
 occurred in old cases, where
 the lung was greatly
 compressed by the large
 growth of the cyst.
 When the cyst has ruptured
 into a bronchus without
 operative interference, it is
 not advisable to use any
 operative measures, unless
 the cyst is very old & large
 & adherent to the chest wall
 & if we think the patient
 is not strong enough to
 bear the exhaustion
 consequent on the long time
 it takes for the expulsion
 of the cyst by expectoration.
 If we meet with such a case
 the best treatment to pursue
 is to make a free incision
 with antiseptic precautions
 between the ribs & introduce
 a large drainage tube, when
 the troublesome paroxysmal
 cough & expectoration will
 soon be relieved. This is
 undoubtedly the best treatment

for old suppurating cysts of the lung & for cysts in the pleura, when the cyst is adherent to the wall of the thorax.

The drainage tube is left in for a fortnight or three weeks & the sac can be washed out with carbolic or other disinfecting solution. At the end of two or three weeks the incision may be enlarged if necessary & the drainage shortened or removed when the larger daughter cysts & the parent sac will gradually be forced through the opening by the gradual expansion of the lung as it returns to its normal state. The drainage tube is retained in the wound & gradually shortened till all discharge ceases & the lung becomes normal.

Lapping or incision should not be delayed once we are satisfied of the presence of hydatid in the lung, as the risks are but slight & the results so uniformly successful, whereas if left to themselves although occasionally

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we meet with cases which terminate satisfactorily, as a general rule the result is unsatisfactory. There are some cases such as pregnancy where we are not justified in operating & we must trust to the administration of drugs, as Iodide or Bromide of Potash & Kamela & Surpentine either through the stomach or by inhalation. For a great deal of this thesis I am deeply indebted to the lectures & chemical teaching of my sincere friend Dr Bird & Mr Fitzgerald, under whose careful tuition I had the advantage of working out the diagnosis & seeing the successful treatment of a great many cases, both in hospital & private practice.

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