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OBSERVATIONS

on EIGHT CASES of HYDATID DISEASE.

-by-

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During eight years practice in the Colony I have been struck by the frequency of the occurrence of cases of hydatid disease. I have therefore decided to adopt this subject for my thesis. Both as regards my private practice, and my position as Government Health Officer, the importance of hydatid disease has been forced upon me. This disease, although comparatively rare in Great Britain, is very common in New Zealand, and I am afraid is here on the increase. But for the excellence to which surgical procedure has attained, the death-rate from this disease would be a very high one. In New Zealand, with a population of approximately the same as that of Glasgow, operation for hydatid disease is of daily occurrence.

## HISTORICAL.

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That the disease existed in ancient times is amply proved by the writings of Hippocrates, Artaeus and Galen (vid. Verco and Stirling in Allburt's System of Medicine); but their knowledge was exclusively based on pathological observations. The animal nature of the

"small and numerous bladders full of fluid" was not suspected until the end of the seventeenth century. Pallas in 1760 and Goeze in 1782 suggested that hydatids were forms of tape-worms; but it was not until 1842 that Stenstrup's theory of the Alternation of Generations put our knowledge of the cystic worms on a firm footing. From that time onwards our knowledge of the disease made rapid strides, and in 1871 Lindemann inaugurated the operation for

radical treatment. In 1884 Dr. Davies Thomas, of Adelaide, published what must be considered our classic on hydatids, and since then more or less important monographs have appeared.

#### ETIOLOGY.

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Thomas (p.180 Hydatid Disease) says that the spread of hydatid disease is determined by four factors:-

1. By the number of dogs in the country;
2. BY the opportunities that exist for enabling the eggs bred in the dogs to be swallowed by domestic herbivora and man;
3. By the number of domestic herbivora--sheep, oxen, pigs, etc.;
4. By the frequency with which dogs eat the organs of infected sheep, etc., containing living hydatids.

"Given a country with many sheep, etc.," Thomas says, "the organs of which are often eaten raw

"by dogs, if the water supply be scanty, and be pro-  
"cured from bogs, swamps, water-holes and dams, on  
"the banks of which dogs may deposit the eggs, to be  
"blown in by the winds, or washed in by the rains,  
"and there be dogs in abundance, we then have all  
"the conditions necessary for the spread of the dis-  
"ease. But if sheep, oxen, pigs, etc., are few,  
"there will be but few hydatids; and if there are  
"not many dogs there cannot be many tape-worms."

In many parts of New Zealand such conditions exist, and it is interesting to note that in the New Zealand Veterinary Science Report for 1905, the following passage occurs:-

"It may be taken that eighty per cent. of the  
"dogs in New Zealand are suffering from tape-worm,  
"and are continually voiding segments full of eggs,  
"each of which is capable of producing hydatid dis-

"ease in either man or the lower animals."

Iceland and Australasia enjoy the unenviable notoriety of furnishing by far the most cases of hydatid disease. The factor common to each country is the intimate relationship of dog with man; and in Australasia we also have to contend with the intimate association of sheep, dogs, and man. The dogs are fed on offal from the slaughter-yards; the men drink water from pools and lagoons which have been contaminated, and so the disease spreads. Hydatid disease, however, is by no means restricted to shepherds and **men** engaged in country work. In the cases which I shall mention, more than half of the patients were females. Verco and Stirling give the ratio of 77 females to 100 males in 2307 cases. In Iceland, where the dog is essentially a domestic animal, more than twice as many women

as men suffer from the disease. As would be expected, hydatids are rare in the very young or the very old. They are commonest in persons in the prime of life.

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#### C A S E S .

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Having thus briefly outlined the History and Etiology of the disease, I shall proceed to describe the most interesting of the cases which have come under my personal observation.

C A S E 1.

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Miss J-----, aged 21, School Teacher, living with her parents on a Sheep Farm, four miles from Blenheim.

Consulted Dr. Cleghorn (my late partner) in March 1898. She complained of a cough, loss of weight, and daily spitting of blood. Dr. Cleghorn, finding no trace of tubercular disease, asked me to examine her with him. The chest appeared to be normal, the sputum was examined for tubercle with negative result. She was ordered creosote, cod-liver oil, liberal diet, and open-air treatment; and asked to report to Dr. Cleghorn every week. This she did regularly, usually bringing with her a specimen of a recent blood-stained expectoration. This was examined by us repeatedly, and a specimen was sent to the Government bacteriologist in Wellington. He failed to find any tubercle bacilli. Two

months afterwards, Dr. Cleghorn discovered an area of dullness about the size of a large orange in the left sub-clavicular region. He decided to aspirate, and arrangements were made to do so on the following day. On calling at her house for this purpose, we were surprised to find that the patch of dullness had disappeared. Nothing was therefore done, and the patient was asked to continue the previous treatment. About this time, small yellow granules were noticed in the expectoration, and we were led to suspect the presence of actino-mycosis. It was then arranged for the patient to go to Wellington, in order that Mr. Gilruth, Government bacteriologist, could have the advantage of examining the expectoration when fresh. He did so, and reported that there were no traces of actino-mycosis or tubercle. Being non-plussed again, we were able

only to watch the case as before. The patient's condition remained about the same, but she was much depressed by our failure to discover the cause of her illness. On the 17th of August, she brought to my consulting room a bottle in which was an easily recognised hydatid cyst, of the size of a large walnut. From that day onward her improvement was rapid. There was no more haemoptysis, and no more cough; and she soon reached her normal weight. I last saw her in October, 1905, and she had been and was quite well.

R E M A R K S :-

This case is illustrative of the spontaneous cure of hydatids, and also shows the extreme difficulty in diagnosing a small pulmonary hydatid.

Thomas says:-

"It is obvious that a smooth body, such  
"as the ruptured mother-cyst, may be easily moved  
"in accordance with changes of posture of the pat-  
"ient, and such changes must of necessity be ac-  
"companied by a corresponding alteration of the  
"physical signs."

The bacteriological examination of the sputum  
was, in this case, no aid to diagnosis. Some sur-  
geons, on discovering an area of dullness in the  
chest of a patient in whom the presence of hydatid  
disease is suspected, are accustomed to make use  
of an exploratory puncture. Evil results have fol-  
lowed this procedure, and in my opinion such a me-  
thod of diagnosis is unjustifiable. Lendon  
(Hydatid Disease of the Lungs), says:-

"It once fell to my lot to witness the symp-  
"toms provoked by the unintentional aspiration of

"a cyst, and I hope it may never be my misfortune  
"to cause such an accident again."

Dougan Bird considered that the fact that the  
dullness of hydatids was to some degree alterable  
with change of position, was the only special phys-  
ical sign of pleural hydatids; but he admitted  
that the phenomenon was only suggestive, and no t  
convincing. Lendon says he has never detected it.

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C A S E 2.

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Miss D-----, aged 18, daughter of a farmer in my district.

Was brought to me supposed to be suffering from "poverty of blood". Her family history was a bad one -- tubercular on the mother's and alcoholic on the father's side. She complained of cough, loss of weight, and symptoms due to anaemia, from which she was undoubtedly suffering. On examination, distinct dullness was found over the right apex in front and behind, and extending down to the second rib. Vocal resonance was not markedly increased, and there was no bulging of the chest wall. The patient had no night sweats, no temperature, and there was no tubercle in the scanty expectoration. She was put on open-air treatment, with creosote,

cod-liver oil, and forced feeding. Three weeks later she expectorated a small piece of hydatid cyst wall (verified by microscopic examination). On January the 22nd, I operated on her. Two and a half inches of the second rib was removed, the adherent pleura was opened, and a ruptured cyst of the size of a mandarin orange was removed. Drainage was kept up for six weeks, and then the wound was allowed to heal. The patient was extremely well for three months, when the cough returned, and she began to lose weight. She now had night sweats, and temperature; the sputum was found to contain tubercle bacilli. She went from bad to worse, and died on September the 19th. No post mortem was allowed.

In this case the expectoration of a small piece of hydatid membrane enabled a certain diagnos-

is to be made. I feel sure that, at the time of operation no tubercular mischief was present. I ascertained afterwards that Miss D-----'s great friend was a young lady (Miss F-----). This young lady spent hours in Miss D-----'s company, and subsequently came under my care, suffering from advanced phthisis -- another instance, if such be necessary, of the need of isolation of phthisical patients.

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C A S E 3.

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Mrs. M-----, aged 42, resident of the North Island of New Zealand.

On January the 18th, 1902, was brought to me by her sister. The sister explained that Mrs.M--- was suffering from "cancer of the lung", and had come to Blenheim to say Good-bye to her people. Purely, I think, as a compliment, I was asked to examine her. The patient was emaciated (she had lost three stone in weight), and in the left infra-clavicular region, there was a distinct bulging. Over this area there was dullness and absence of breath sounds, and the presence of fluid was suspected. On this occasion I inserted a fine hypodermic needle, and drew off fluid. To a little of the fluid was added a few drops of  $\text{AgNO}_3$ , and a

dense white precipitate of chlorides resulted. Then a few drops of the fluid were examined under the microscope, and the characteristic hooklets of hydatids were discovered. Three days afterwards I operated, removed three inches of the third rib, and was pleased to find the pleura again adherent. On opening it I came at once on the cyst wall, inserted a trocar, and drew off several pints of fluid. Opening the ecto-cyst, I was able to remove the endo-cyst entire. It was about three-quarters the size of a Rugby football. The ecto-cyst, pleura and skin were then stitched together, and the cavity was drained. The patient made an uninterrupted recovery, and three months afterwards returned to her home, having regained one and a half stone of her normal weight. I heard from her a few months ago, and she was quite well.

In reference to this case, I have an interesting fact to record: the weather at that time was very warm -- 89° Fah. in the shade, or thereabouts. After using the fluid from the hypodermic syringe for examination, I placed the instrument in my cupboard. About a week afterwards, it struck me that I had better empty and sterilise the syringe, and I proceeded to do so. On pressing the piston, I failed to express the contents; so I unscrewed the nozzle, when, to all appearance, a tiny hydatid cyst appeared. I placed it in a glass vessel, and showed it to my partner, Dr. Walker, who gave it as his opinion that this was a small hydatid cyst. It was the exact shape of the glass cylinder of the syringe, and closed at both ends. Unfortunately, the specimen was destroyed next day by a servant, but I was so impressed by the occurrence that I

reported it to Dr. Mason, the Chief Health Officer, who asked Mr. Gilruth, Chief Veterinary Surgeon, to conduct a few experiments, in order to ascertain if such a thing were possible. Mr. Gilruth reported to me that, after careful experiments with hydatid fluid, taken from sheep, no new formation, under similar circumstances, was noticed. I am still, however, of opinion that this new formation did occur, and am waiting an opportunity for further experiments in this direction.

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C A S E 4.

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Miss G-----, aged 23, Sister of the Owner of Sheep Station near Blenheim.

Consulted me on January the 6th, 1902. She complained of great loss of weight (over two stone in a year); twelve months amenorrhoea, occasional swelling of the ankles and feet, restlessness and great irritability of temper. She had just returned to New Zealand after an eighteen months' tour in Great Britain and on the Continent. She had consulted two "specialists" (names not ascertained) in Edinburgh and London, and both had ordered her "iron tonic". She had never previously been ill. On systematically examining her, the following physical signs were discovered in the chest and abdomen:-

The liver dullness in the mammillary line was absolute from the fourth rib, and extended downwards to one inch below the costal margin. In the mid-axillary line the dullness commenced at the third rib, and extended to the tenth inter-costal space; the upper limit of the dullness being thus somewhat dome-shaped. Percussion in the inter-costal spaces gave a sensation of great resistance. Inspection revealed nothing. There was no bulging of the chest wall, and both sides appeared to expand symmetrically. On using the stethoscope the breath sounds were found to be normal. They were somewhat faint in the area above the dullness, and vocal resonance was slightly increased. There was no displacement of the heart to the left. On attempting to palpate the lower border of the liver, resistance was felt, but it could not be clearly defined. The right kidney was easily palpable. It was considerably

enlarged and displaced downwards, so that its upper border was about one and a half inches below the costal margin. a hypodermic needle was inserted between the fifth and sixth ribs in the mammillary line, and a clear fluid was obtained. It was found to contain no albumen, but gave a dense precipitate of chlorides. On microscopic examination, hooklets and a scolex were found, and thus a positive diagnosis of hydatid of the liver was arrived at. Operation was proposed and accepted, and Dr. Collins -- the well-known Wellington surgeon -- was engaged to assist me in performing it. In writing to Dr. Collins I stated that I thought it would be necessary to operate through the chest wall. On January the 10th, Dr. Collins arrived from Wellington, and examined the patient. He had no difficulty in confirming the diagnosis, but was anxious, if

possible, to operate by the abdominal route, as being safer (13.8 per cent. death-rate as opposed to 32 per cent.). He therefore inserted a hypodermic needle between the eighth and ninth ribs in the mid-axillary line, and obtained fluid. On leaving the patient, he was still undecided as to which course to pursue. The operation was fixed for the next day at 9 a.m.; but at 10.30 p.m. on the same night, the nurse in charge of the private hospital reported that Miss G-----'s temperature was 104° and pulse 125, and that she was suffering from severe abdominal pain. Dr. Collins and I went at once to see her, and came to the conclusion that a little hydatid fluid had escaped into the peritoneal cavity. One-quarter of a grain of morphia was administered, and the operation was postponed. Next morning the pulse and temperature were normal, and

all pain had gone. On January the 12th, the operation was performed, Dr. Collins having decided to go through the thoracic wall. He cut down along the line of and resected three inches of the sixth rib. The middle of the incision, which was about four and a half inches long, was in the mid-axillary line. The pleura was opened and the liver surface reached; a hypodermic needle was carefully inserted, and fluid was obtained when the needle had pierced about one-eighth of an inch of the liver surface. The liver was incised, and the glistening cyst wall of the hydatid was at once exposed. This was seized by catch forceps, a trocar was inserted, and several pints of fluid evacuated. Then the cyst, which proved to be the size of a Rugby football, was carefully drawn through the wound; the liver surface, forming the ecto-cyst or adventi-

tious cyst, the pleura, inter-costal muscles, and skin were all stitched together, and a drainage tube inserted. The patient made a splendid recovery. Drainage was kept up for three months, by which time the cavity had become obliterated. Miss G---- soon recovered her lost weight, and her usual condition of robust health.

REMARKS :-

I consider this case the most interesting of the series, and for that reason have gone into it more fully.

The following are the interesting points:-

1. The young lady, who had just completed her University course for the B.A. degree, spent all her spare time on her brother's sheep station;

2. The well defined dome-shape assumed by the liver swelling, in contradistinction to the usual shape of pleuritic effusion, which, highest towards the spine, diminishes from behind forwards.

3. The rigor after diagnostic puncture, and the speedy recovery from it. In this case there was no urticaria.

4. The swelling of feet due to portal obstruction. I have not seen this symptom in any other case of the disease, nor have I seen it mentioned by any writer on hydatids.

5. The enlargement of the right kidney, due to its displacement. Dr. Collins and I were afraid that there might be a renal hydatid, but the kidney six months after the operation was normal in shape, and nearly so in position.

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C A S E      5.

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Mr. W----, aged 25, Shepherd on a Sheep Station 65 miles from Blenheim.

Consulted me on May the 10th, 1904. He complained of pain and a feeling of tightness in the epigastric region. He at first noticed the pain about six months previously. He consulted a doctor in Nelson on May the 1st, and had been told to wear a tight belt, and that nothing else could be done. He found that wearing the belt increased the pain, and therefore determined to seek other advice.

On examination: There was a slight but distinct bulging of the chest below the ensiform cartilage, and the liver dullness in the middle line reached the umbilicus. The patient in every other way seemed perfectly healthy. I advised that the abdomen should be opened, and told the patient that

most likely we would find a hydatid tumour of the liver. The operation was performed on May the 16th, and a large hydatid about one-third the size of a football was removed. The same technique as in the previous case was observed, and six weeks later the patient was so far recovered as to be able to leave for his home.

REMARKS :-

1. The medical man in Nelson had evidently considered the case one of ventral hernia, but there was no impulse on coughing, and the bulging area, with such a recent history, was too large for such a condition.

2. The comparative absence of symptoms is remarkable, as also the presence of pain. There was no emaciation, and no constitutional disturbance whatever.

3. I considered it advisable to cut down on the swelling, without first attempting to verify the diagnosis by hypodermic puncture.

C A S E     6.

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Miss W----, aged 19, a Maori girl living at Waikawa Pah, 25 miles from Blenheim.

Was first seen by me on June the 10th, 1904. She told me that for two years she had noticed a slowly increasing swelling in the upper part of the abdomen, but that as she was in perfect health she had not previously sought advice. She admitted that but for the alteration in her figure, she would not have consulted a doctor at all.

On examination: A swelling was noticed, which involved the whole of the epigastric and right and left hypochondriac regions. Its highest point was in the middle line, two inches below the ensiform cartilage. The tumour was tense, firm and rounded, and over its area there was distinct and uniform dullness, which did not vary with change of pos-

ition. The physical signs in the abdomen below the swelling were normal. Above, the dullness was continuous with that of the liver. A provisional diagnosis of hydatid tumour was made, and on June the 15th an operation was performed. On opening the abdomen, it was at once seen that the swelling was due to hydatid tumour, which was of the peritoneal variety. The insertion of a hypodermic needle showed the presence of fluid, which, on the withdrawal of the needle, formed a jet of three or four inches in height at the point of puncture. The hypodermic needle was replaced by a trocar, and a very large quantity of bile-stained fluid was evacuated. The ecto-cyst was then incised, and daughter-cysts to the number of twenty were expelled. Some of these were fresh and full of clear fluid, others were

partially collapsed, and the contents were discoloured. The hydatid was a huge one, and the fibrous sac was thick and adherent in all directions -- to the under surface of the liver, to the abdominal parietals and to the right kidney. The freeing of the adhesions proved to be such a difficult task that when about one-quarter of the ecto-cyst had been drawn out of the wound, the patient was in a state of collapse. I therefore desisted from the attempt to remove the whole of the ecto-cyst, cut off the piece which was already out of the wound, and stitched the opening into the cyst to the abdominal layers and skin. A large drainage tube was inserted, an idea of making a counter opening in the flank was abandoned, and the patient was put to bed in an extremely exhausted condition. I held out little hope to her relatives, but, to

our satisfaction, the patient slowly rallied from the shock, and afterwards made steady progress to recovery. Drainage was maintained for three months. I last saw the patient in December 1904; the wound had quite healed.

REMARKS :-

The points of interest in this case are:-

1. The large size of the tumour. The daughter-cysts with the piece of ecto-cyst which was removed filled three 2-lb. jam jars. It was impossible to estimate the amount of fluid.

2. The absence of symptoms with such a condition present.

3. The longstanding nature of the disease, causing the adhesions, and the marked thickening of the fibrous sac.

4. The bile-stained fluid. This has been described by Thomas (Hydatid Disease) and Bristowe (Pathological Society's Transactions, vol.IV, p.166), and they consider the discolouration to be due to Bilirubin.

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C A S E 7.

---

Mr. O'S-----, aged 21, Farm Hand on a Sheep Station.

Came to see me on June the 1st, 1904. He complained of cough and loss of weight. Other symptoms and signs of phthisis in the right apex were present, and he was admitted to the Waiiau Hospital for open-air treatment.

On examining him carefully on admission to the Hospital, a large swelling was felt in the right umbilical region. The tumour, which was easily movable, appeared to be about the size

and shape of a cocoanut. The right kidney could be felt in its normal position, and the urine was normal. Several medical men examined the patient, and the general view was that the tumour was of a tubercular nature. No one ventured a definite diagnosis. Operation was decided on, and on June the 11th, the day following the operation described in Case 6, the abdomen was opened. Attached to the anterior margin of the liver, and hanging from it

free in the peritoneal cavity, was a hydatid tumour about half the size of a football. It was opened and evacuated in the usual way. The ecto-cyst in this case had no adhesions, and was delicate in texture. Bearing in mind my experience of the previous day, I decided to make no attempt to remove the ecto-cyst, and the following method was adopted:-

The internal surface of the fibrous sac was thoroughly dried, and the edges of the opening in it brought together by a continuous suture of fine silk. The ecto-cyst was then dropped back into the peritoneal cavity, and the abdominal wound was closed without drainage. The wound healed by first intention. In March 1905 the patient died of Phthisis, and, at my request, Dr. Walker performed a post mortem

examination, at which I was present. No trace of the ecto-cyst could be discovered.

REMARKS :-

The interest of this case depends on the adoption of the above method of dealing with the ecto-cyst. I had never heard of it before, but have since learned from medical friends that it had been previously carried out in Australia. In the literature at my disposal I can find no mention of any such case. I should imagine that such procedure can only be possible in cases where the fibrous sac is thin, and of recent formation. The death of the patient nine months afterwards gave the opportunity of proving that such a fibrous sac can be completely absorbed.

C A S E 8.

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Mr. B-----, aged 26, married, and assisting his father on a farm at Kaikoura.

Was brought to me on February the 12th, 1904.

The history was that a year previously he had fallen from his horse, and hurt his head. His father told me that since the accident, his son had never been the same, and that on four occasions he had "fallen down in a fit". There was also a history of vomiting, headache, giddiness, loss of memory, inability to write a letter, general impairment of intellect, affected vision, and extreme irritability of temper.

On examination: The patient had a stupid expression, spoke slowly and indistinctly, was somewhat ataxic in his gait, had partial right facial paralysis, marked weakness in the right arm, and

double optic neuritis. A diagnosis of the cerebral tumour was made. An operation was performed on February the 22nd, the trephine opening being over the junction of the face and arm centres on the left side. On lifting the disc of bone, there was marked bulging of the dura mater. A fine hypodermic needle was introduced, and a clear fluid was obtained. A small incision was then made in the dura, about a wineglassful of clear fluid escaped, and the bulging disappeared. The incision was enlarged, the edges of the dura held apart, and the glistening cyst wall of hydatid was recognised. A blunt pair of forceps easily removed the cyst wall entire. It was the size of an ordinary orange. A drainage tube was inserted, and the operation was completed. The patient seemed for the first few days to be doing well, although not one of his

symptoms was alleviated. On the fourth day after the operation, the patient's temperature rose from normal to 101o, and his pulse rate increased from 90 to 110. Sepsis was suspected, and when, on the seventh day, broken-down brain tissue commenced to appear through the tube, and the patient became restless and semi-delirious, this fear was confirmed. Leiter's ice-water cap was applied, and the sleeplessness overcome by small doses of opium. The patient, however, went from bad to worse, was comatose on the eleventh, and died on the fourteenth day after the operation.

REMARKS :-

The cyst was a simple one, with no daughter-cysts, and no ecto-cyst had been formed.

C O M M E N T A R Y .

---

In addition to those described I have had five other cases of hydatid disease in my own practice. Since coming to Christchurch I have assisted at three operations for the same disease.

S I T E :-

In these sixteen cases the distribution was as follows:-

Liver, . . . . .	5
Lung, . . . . .	5
Peritoneum, . . . . .	3
Superficial Muscles, . .	2
Brain, . . . . .	1 .

S E X :-

Females were affected in ten cases, the other six being males.

OCCUPATION:-

All in country life.

A G E :-

From 18 to 42 years.

DIAGNOSIS:-

The eight cases which I have described are illustrative of the disease in

- I. The Liver.
- II. The Lungs.
- III. The Peritoneal Cavity.
- IV. The Brain.

## I. THE LIVER.

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Hydatid disease of the liver has to be distinguished from other tumours or enlargements of the liver, and swellings in the vicinity of the liver.

In Case 4 the question of diagnosis presented little difficulty. Effusion into the right pleural sac, and hydatid at the base of the right lung, were the only conditions to be eliminated. Against both was the absence of pulmonary symptoms, either past or present; and the presence of oedema of the legs and feet favoured a liver condition. The dome-shaped area of dullness was very suggestive of hydatid of the liver. The typical shape of dullness due to pleuritic effusion

has been already mentioned. The dead dullness of the area was strongly in favour of trouble in the solid organ, as was also the displacement downwards of the right kidney. The fluid withdrawn by the hypodermic needle contained no albumen, and gave a dense precipitate of chlorides with  $\text{AgNO}_3$ ; further, on microscopic examination hooklets and a typical scolex were recognised without difficulty.

In Case 5 it seemed to me more difficult to make anything like a positive diagnosis. The presence of pain is unusual in hydatid disease, but the total absence of other symptoms in a swelling of such size was, in my opinion, very suggestive. There was no jaundice, nor any history of it, nor any other symptoms of a distended gall bladder.

There was no history of syphilis, so therefore enlargement due to that cause was extremely improbable.

In this case I did not seek the further aid of a hypodermic needle, for my experience, and that of others, had by this time taught me that such procedure is a dangerous one. I consider that diagnostic puncture should be resorted to only during the operation; and perhaps it is a justifiable risk in rare cases, where there is great difficulty in diagnosing the condition. Verco and Stirling lay down the rule that no diagnostic puncture is permissible unless everything is ready for immediate operation, in the event of hydatid fluid being obtained.

"THE HYDATID THRILL":-

I have not so far, in describing my cases, mentioned the physical sign known as "the hydatid

thrill" -- the one sign of hydatid disease which every student learns and never forgets. This well-known phenomenon, so far as I am concerned, has proved a myth. I have always looked for it, but never found it; nor have I met any medical man who has in this respect been more fortunate than I.

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## II. THE LUNGS.

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Hydatids of the lungs must be differentiated from phthisis, gangrene of the lungs, mediastinal tumour, carcinoma, and, as I have shewn in Case 1, from actinomycosis.

In Case 1, diagnosis was found to be impossible until the patient expectorated the membrane.

Virco and Stirling say:-

"skins may be expectorated abundantly,  
and yet a careful examination of  
the chest will fail to reveal  
their source."

In Case 2, the diagnosis lay between pulmonary hydatids and phthisis, and the absence of night sweats, pyrexia, and tubercle in the sputum

should have put me more on my guard than it did.

In Case 3, carcinoma had already been diagnosed. A.A.Lendon, in his book HYDATID DISEASE OF THE LUNGS, p.18, describes a case of suspected hydatid cyst in the lung that turned out to be sarcoma. In that case the patient had had her foot amputated for sarcoma some years previously. Dr. Lendon concludes the paragraph with this remark:-

"I do not remember the converse error  
being made, viz., a hydatid cyst  
being thought to be a solid tumour  
of the lung."

He also says, p.19:-

"in the case of an unruptured cyst in the  
lung, the diagnosis cannot be made  
with absolute certainty" --

i.e., without exploratory puncture. In the case of Mrs. M----, the hypodermic syringe was the sole deciding factor. I think, however, that before diagnosing carcinoma, one should carefully exclude the possibility of hydatid tumour.

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### III. THE PERITONEAL CAVITY.

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Hydatids of the peritoneum may be single or multiple. When multiple the operative difficulties are much increased. This variety is generally supposed to be caused by rupture into the peritoneum of a liver hydatid. Hydatids of the peritoneum have to be distinguished from the numerous varieties of swellings that are found in the abdominal cavity, and very frequently this can only be done when the tumour is exposed and examined.

In Case 6, on account of the marked physical signs, and the history of two years' duration of the swelling; the absence of constitutional symptoms, and the normal condition of the lower

abdomen, I was led to suspect the presence of hydatid disease as being the most probable condition.

Case 7 exemplifies the difficulty of distinguishing hydatid of the peritoneum from any other abdominal tumour. No exploratory puncture was attempted.

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#### IV. THE BRAIN.

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Hydatids of the Brain: Their symptoms are similar to those caused by other brain tumours and swellings. The exact nature of the condition can only be guessed at. Even were an exploratory puncture possible, the similarity of hydatid and cerebro-spinal fluid is so great, that it would be little aid to diagnosis, unless hooklets and scolices were found to be present. As brain cysts are frequently sterile, it is sometimes impossible to distinguish one fluid from the other.

Thomas, HYDATID DISEASE OF THE BRAIN, p.88,

says:-

"More than half the cases of tubercular tumour of the brain die during the first decade of life. More than half the cases of

cerebral echinococcus die during the combined second and third decades of life. Both sarcoma and glioma occur with maximum frequency in the fourth decade. Carcinoma is probably most often met with after the fourth decade."

The presence or history of hydatid disease in some other part of the organ would be suggestive of the brain condition being of a similar nature, and the prevalence of hydatid disease in the country in which the patient is residing should also be taken into consideration.

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## T R E A T M E N T .

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Several methods of treatment, such as acupuncture, electrolysis, injection of fluids into the cyst, drainage and evacuation through a canula inserted into the cyst, are now only of historical value; and aspiratory puncture, although still practised by a few surgeons, will probably soon be added to the above list of abandoned measures of treatment. The advance of surgery has rendered these methods useless, and, in comparison with the procedure adopted in removal by direct incision, even dangerous.

Lindemann introduced the operation in 1871, and in 1881 Lawson Tait published an account of

four cases treated in a similar manner. At the present time, in New Zealand and Australia, this operation is practically the only recognised manner of dealing with hydatid cysts. The operation is simple, and can be adopted in all forms of hydatid disease with the exception of the multiple variety found in the peritoneum. These must be removed singly, their adhesions being first ligatured.

In seven of my cases I adopted Lindemann's operation, and have described the technique in each case. In Case 7 I described a method of dealing with the ecto-cyst by suturing, and closing the abdominal wound over it. I have ascertained, since writing my description of Case 7, that this

method was advocated and practised by Mr. Bond, of  
Leicester.

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## PROGNOSIS .

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The death-rate following the operation in 101 cases treated at the Adelaide Hospital was 16.5 per cent. It was found that in nearly all the fatal cases, suppuration had commenced, and that fact should emphasize the importance of early diagnosis and operation.

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