

# Streptococcal Infections and Infectious Mammitis of the Cow

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A great many cases of these infections have come under my care during the last few years, and some of them I have been able to trace directly and certainly to infected milk. So conclusive has the evidence been that I decided to quote notes of my cases to you, gentlemen, and the conclusions that I have come to regarding them.

I shall bring forward evidence to prove that this infectious mammitis of cow is due chiefly to a streptococcal infection, although other germs are also frequently present. I may say in passing that it is probably only those of us who have practised in country districts who have had the opportunity of proving these factors in producing these and mixed infections.

On 19<sup>th</sup> October, 1919, I was called in to attend the three children of Mr. R—, of Geraldine, they having previously been treated by Dr. Hyslop of that town, who recognised that they were suffering from some form of germ infection, and as they were too far from him to treat them as he would like, they were removed to Christchurch and then on to New Brighton. When I first saw them their condition was as follows:—

Tom, aged 3 years.—Temp. 102 to 103 every night; glands on both sides of neck very swollen, also tonsils, and one ear discharging profusely. Dirty spotty tongue.

Janet, aged about 5 years.—Sores resembling impetigo all over feet, legs, and part way up thighs; hands and arms covered with a rash which looked like a cross between scarlet fever and measles (which parts subsequently peeled). Spotty tongue.

Elizabeth, between 7 and 8, was running about, but looked pale and feverish, evidently not well, and had a dirty spotty tongue, and on 28<sup>th</sup> October she developed well-marked scarlet fever and was sent to

Bottle Lake Hospital for that disease. Here she developed two mastoid abscesses, which were operated on by Dr. McGibbon, and afterwards ran a very high temperature (probably due to some septic inflammation of some of the deep veins), and was treated by anti-streptococcus and other serums, and ultimately recovered.

The previous history of the cases was as follows:—

Up to the beginning -of August, 1919, these children had never had a day's illness, and were all fine, healthy specimens of childhood.

On 8<sup>th</sup> August a new cow calved on the station, a good cow, and apparently quite sound. This cow was milked by two members of a neighbouring family, both of whom were suffering from sores on hands at the time the trouble occurred (probably impetigo).

On 25<sup>th</sup> August all the children's temperatures were over 100deg. Fah.

On 30<sup>th</sup> August Tom very feverish and treated for tonsillitis.

On 4<sup>th</sup> or 5<sup>th</sup> September Janet started sores, and all the children had been unwell all the week.

On 15<sup>th</sup> September Janet treated for impetigo. Tom had very swollen glands of neck.

On 7<sup>th</sup> October Tom's neck still very swollen and ear discharged slightly. He was again taken to Dr. Hyslop, who said they had some form of germ infection.

On 9<sup>th</sup> October Dr. Hyslop thought Tom was sickening for something else. Brought children in to Christchurch.

On 10<sup>th</sup> October consulted Dr. Irving of Christchurch for Tom and Janet. Tom's ear discharged enormously.

On 14<sup>th</sup> October came to New Brighton.

On 19<sup>th</sup> October I was called in, and thought I recognised streptococcal infection, probably from the milk, as I could ascertain no other source, and I procured a specimen and had it examined by Dr. Pearson, and obtained the following report. The sample of milk was taken from cow by Mr. R. himself and all outside contamination eliminated:—“Microscopic examination: Profuse pus cells of polymorph type. Gram positive cocci resembling streptococcus in very large numbers. Cultures showed a profuse growth of streptococcus. The reaction of this organism has not yet been worked out.”

From this report it was evident that the milk was the cause, but whether the cow had become infected from the man or the man from the cow it is hard to say; but probably, as the children were all perfectly healthy until this cow's milk was used, the man's hands became infected from the cow; or it may have been a coincidence that the man had sores on his hands.

I was led to this train of thought by two other cases of streptococcal poisoning from milk some years ago, when resident at Kurow.

A Stock Inspector asked me to make up a Winchester quart of 4 per cent. boracic acid lotion, which, on enquiry, was required to treat the udder of a cow suffering from “infectious mammitis,” which is due to a streptococcal infection, and sometimes attacks one quarter of the udder only, sometimes, of course, several quarters.

As this was a very valuable Ayrshire cow which gave over a bucketful of milk at each milking, the Inspector and his agents persevered with her until they thought they had her cured, and afterwards purchased her. At the next calving he milked her and used the milk, but whether he was in the habit of drinking it warm from cow or not I don't remember; but I was called to treat him soon afterwards for pelvic cellulitis, with retention of urine. He was in great agony and had to have catheter used night and morning for a good long time. On examination per rectum, all the pelvic organs were set, as in a hard block; an abscess subsequently formed beside bowel and pointed, and was opened in ischio-rectal fossa, the pus from which contained streptococci. I also examined stools a considerable time after he was able to go about, and

still found streptococci; he was about six months ill altogether. I cleared up the bowel infection at last with methylene blue.

One of his agents who also used the milk became infected soon afterwards with a troublesome colitis, which impelled him to lie up for a considerable time.

I persuaded them to have cow dried off and fattened; as I felt certain she was the cause of trouble.

There are so many cases of streptococcal poisoning, from throat downwards, that there is evidently some prevalent and general cause for the trouble, and what more likely than that one of the main causes is infected milk? This infectious mammitis (known amongst dairymen as “bad quarter”) is one of the commonest troubles amongst dairy herds, and unfortunately the owners do not recognise the seriousness of the trouble sufficiently to throw the milk from the cow away, and the danger to the public in putting it in the cans. In the suburbs of Christchurch we have large numbers of cases of streptococcal infections of throat, some of them no doubt due to open drains leading into holes in gardens; and this condition of affairs is very common in some of the rapidly-growing suburbs of Christchurch and other cities, where no scheme of proper drainage is in existence to carry off the wash-up water from the dishes. I have just had three cases of streptococcal poisoning in one house where the following condition of affairs existed: Untrapped sink in kitchen leading into an open wooden drain in garden, which drain is moved about in different directions in garden to allow contents to soak in.

I took a swab from this drain and obtained a bacteriological examination of same from Christchurch Hospital. Here it is: “On cultivation the specimen showed a mixed growth of bacillus subtilis coli and streptococcus.”

One of the children had high temperature, spotty tongue, enlarged tonsils and glands and endocarditis, with loud murmurs. Now all are quite cleared up with the treatment I mention later on. The two other members of family had the sore throat and spotty tongue. So that I know that this state of affairs also is responsible for a great many sore throats of streptococcal type. What more favourable condition could these aerobes have for their growth than an open drain?

But there are many other cases in which no cause can be traced and are most likely due to milk which has been infected.

Two cases of Henock's purpura in which I had stools examined were both due to streptococcal infections of the intestines; one of them also had streptococci in urine; both recovered. One of them had many doses of anti-streptococcal serum given, either by the rectum or mouth, and both took a salol mixture for some time. I could not find any definite cause for Henock's purpura from a bacteriological point of view laid down in any text-books, but certainly both of my cases were due to that form of infection.

Then there are those rare cases of streptococcal peritonitis which one drops across occasionally, one of which I have in my mind at present, in which abdomen was opened and drained and all infection from appendix excluded, as it was perfectly healthy.

How often when a mother's milk supply fails and one puts the infants on humanised milk do we meet with disappointment! And why? Again and again I have done so, and in a few days' time what do we have? Green motions, diarrhoea, and vomiting, clearly pointing to some infection in the milk. So often has this happened in my practice in New Brighton that I always insist on the milk being brought up to 155deg. Fah. and sterilised, both for infants and household use; and this I would do even if we could exclude tubercle bacilli.

Again, one of the most pathognomonic symptoms of this kind of germ infection (and the most persistent) is the "spotty" tongue. It differs somewhat from the scarlet fever strawberry tongue in being "muddy" (as well as spotty), instead of red. Wherever one sees it, one can look for the streptococcus and his works. Take a lot of cases of endocarditis in children (very common in these parts), where there is absolutely no history of rheumatism or any of the ordinary infectious diseases, and look at tongue, and in a great majority you will find the "spotty" condition, and you can go for that germ with success; and here, again, other causes being excluded, we are driven to suspect the milk.

Another very common form of ailment in children is an enteritis or gastro-enteritis, where child has been off colour for some time, and where no cause such as

ptomaine poisoning can be proved; here, again, the spotty tongue points to streptococcus poisoning, and milk, being the only uncooked food, is often the offender.

Other cases of acute gastro-enteritis, where child has been perfectly healthy a day or two previously and is suddenly stricken down and in a state of collapse, point to a large dose of some poison which has entered by the alimentary canal, and often there is nothing in the way of food to which the illness can be traced; here, also, the milk supply should be suspected.

A few years ago I was called to see a child whose case puzzled me very much at the time. She was vomiting and purging as if suffering from irritant poison, but I could not discover any possible cause in the food or anything growing about the place; moreover, the temperature was 105deg. Fah. Shortly afterwards the child developed broncho-pneumonia, ran a very high temperature, and finally died. Streptococci were found in sputum and polyvalent anti-streptococcal serum was given, and case improved for a time, but relapsed and died.

Shortly afterwards a second child in same family was taken with broncho-pneumonia, and although I tried the serum again this one also died. With the light of my present knowledge I should say that the reason those children did not sustain the improvement was because I insisted on feeding them on milk; and that milk was in all probability the cause of the trouble. The milk came from the family cow and would have been easily traced had I thought of it. The people themselves were very clean and kept their house very clean also.

Another case that came under my care some years ago: A little boy about eight years old was in convulsions; his face and body were dropsical and he was covered all over legs and part of body with impetigo-looking sores; his urine contained blood and was almost solid on being boiled. Here was another case in which the child had evidently had a large dose of some food or fluid containing streptococci, and if I had a similar case now I should suspect the milk.

The great prevalence of tonsillitis is due to either streptococcal (the most common), Vincent's angina, diphtheritic or tuberculous infection, and of these the first and last are most likely to lead to chronic enlargement,

and what more likely cause of infection can we have than milk, when we remember how children are fed with this article of diet?

One of the most interesting and peculiar developments of these three cases I have mentioned was the third child, Elizabeth, developing scarlet fever. Dr. Pearson, in his report, said that “the reaction of this organism has not yet been worked out.” I was most anxious to know whether he could isolate a streptococcus identical with the scarlet fever type, but owing to his leaving so soon for the Old Country he had no time to finish his researches.

As far as I could ascertain, this child had not been subjected to any scarlet fever infection. All three had kept together and the house they went into in New Brighton had never had any scarlet fever in it; and again, if she developed it from outside infection, why did not the other children also have it? If it could have been proved that infectious mammitis in the cow could start and spread an epidemic of scarlet fever, it would explain many of our recent outbreaks; and I would say that there is a very strong supposition in this case that the elder child did so develop it. For, if the same source of infection could affect the two younger children so differently, why should the third child not develop some different form of streptococcal infection such as scarlet fever? I do not know how far this form of reasoning will influence pathologists, but to my mind the evidence seems sufficiently grave to warrant further research.

Some text-books describe a form of scarlet fever “sine eruptione,” and how often do we see one member of a family of children affected with what was formerly known as “scarlatinal sore throat,” and then other members of same family develop a really fine scarlatinal rash! Does not this point to some common infection?

It has long been recognised that the infection of scarlet fever (as well as typhoid and diphtheria) can be carried in milk; but I do not think it has ever been suspected to be due to milk from a cow suffering from infectious mammitis; and yet this disease of cow is most prevalent right through the country, and I have already shown what havoc it wrought in Mr. R.’s family, and that the resulting developments were different in the case of each child; and to my mind it needs

no great stretch of imagination to believe that this streptococcal infection of udder is one probable cause of scarlet fever.

A word as to treatment of these children: My favourite prescription for these chest, throat, and heart infections is a mixture of spt. amm. co., spts. chlorof., tr. cinchona co., sod. sal., syrup aurantii.

The two younger children improved so fast on this mixture (which has a double shot at the germ) that they were practically well in ten days. The girl’s sores were carefully washed with an antiseptic solution and dressed with Lassar’s paste with 2 per cent. acid salicylic, and healed very swiftly.

I prefer Lassar’s paste with the 2 per cent. acid salicylic where large surfaces are affected with these sores, and ungt. hyd. ammon. chlor. where only few sores are to be dealt with.

The mixture quoted also works well in cases of streptococcal endocarditis.

In these cases of enteritis of streptococcal origin I found nothing equal to salol as a disinfectant; if there is vomiting as well as diarrhoea, I give hydrg. c creta with a small proportion of opium for a start and then castor oil, and follow up with salol and bismuth and pulv. ipec. co. or tr. opii if necessary. And such is my treatment of infantile diarrhoea with green stools—usually omitting the opium, except where compelled to give it for pain and exceptionally frequent stools.

As to prevention, it seems to me that the medical profession should urge much more rigid and thorough examination of dairy herds, cow-sheds, dairies, and the actual milk supply itself. At present it is done in a very half-hearted, inefficient, and untutored way, and is a continual source of danger to the public.

More inspectors and more inspection is required. All herds of dairy cows should be tested for T.B. once or twice yearly.

Frequent inspections as to conditions of udders; also of sheds, dairies, and the milkers, say, every three months.

Not only should milk be tested for additions of water and preservatives, but, what is more to the point, samples should be taken unawares and systematically examined by bacteriologists, or it may in the course of time be done by the inspectors

themselves after a proper course of instruction by bacteriologists. At present the inspection of herds is very inadequate, both as to the frequency of the examinations and the omission of these bacteriological examinations that are so much more necessary than the mere finding out how much water has been added to the milk. Even if they do add a little water, if it is sterilised no great harm is done; but when they dispense germs to the public they should be taught how to exclude them, and my experience amongst a large number of dairymen is that the majority would do their best to supply germ-free milk if they were properly taught. Where a tuberculous cow or bull is found in a dairy herd, the Government pay half the value of the animal to the owner and destroy it. This consideration, in a modified way, could be extended to those owners who possess cows affected with infectious mammitis, and some compensation allowed for drying them off.

To show how prevalent infectious mammitis of cow has become, a dairyman in South Canterbury tells me that one of his neighbours who started the milking season with 60 cows has 25 of them out of commission, suffering from this disease. I obtained two samples of milk from two cows known to be suffering from this lesion; both were supplied by this same friendly dairyman. Here is the report from the Bacteriological Depot of Christchurch Hospital (both were very bad cases):—

No. 1.—Naked eye: Milk of a brown colour. Microscopic: Profuse polymorph pus cells; profuse gram positive cocci in chains; gram negative bacilli. Cultures: A mixed growth of streptococcus, staphylococcus aureus, and bacilli coli.

No. 2.—Microscopic: Polymorph pus cells; gram positive cocci in chains. Cultures: A mixed growth of streptococcus and staphylococcus albus.

It will be noticed that whilst the streptococcus is constantly present in infectious mammitis, other germs are also frequently present, and would no doubt account for some of those puzzling cases of mixed infection which we occasionally are called upon to treat.

#### SUMMARY.

That infectious mammitis in cows is so very common that it is becoming a source of danger to the community.

That it is due chiefly to a streptococcal infection which is constantly present.

That other germs may also be present in this disease and thus give rise to mixed infections in children and others taking the milk.

That milk from a cow suffering from it may cause streptococcal infection in any of the organs of body or skin, or give rise to some special form of disease such as purpura, Henock's purpura, or even probably account for some outbreaks of scarlet fever.

That milk in the unsterilised state is a highly dangerous food and is no doubt responsible for a great many cases of illness amongst children.

When a cow's udder has become infected the first thing noticed by dairyman is that a little curdled milk first comes.

If dairyman milks an infected cow and then milks other cows, the disease soon spreads through the herd.

#### ADDENDA.

Since writing the above I have come across one case of infectious mammitis of cow with a very hard nipple and quarter, and when the sample of milk was submitted to bacteriologist only the staphylococcus aureus was found and no streptococci; but this seems to be an exception, as I have always previously found streptococci. But is it any wonder that people get an attack of boils at times?

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