

British Cattle Veterinary Association Meeting— A New Look at an Old Problem

Anthony H. Andrews, B.V.Sc., MRCVS

Department of Medicine
Royal Veterinary College
London, England

The first session of the British Cattle Veterinary Association Congress at Swindon lived up to its title of 'Mastitis—a new look to an old topic.' Several of the facts relied on by cattle practitioners for many years were challenged and many people will have come away from the meeting a little more enlightened if also somewhat confused. Dr. John Bramley, Head of the Mastitis and Milking Unit of the Agricultural and Food Research Council Laboratory (AFRC), Compton, began with a look at 'Summer mastitis—where do flies go in winter-time?' While not answering the question, he considers summer mastitis to be a misnomer as it could occur at any time. It was a disease associated with *Actinomyces* (formerly *Corynebacterium*) *pyogenes* and anaerobes. It could affect animals of any age although most cases occurred in older cows, particularly four to 10 years old. In practice heifers were more commonly affected but this was due to a lack of dry cow therapy in such animals.

When looking at the Compton herd Dr. Bramley found that in the year 1987-88 cases were not associated with clinical disease and most infections disappeared quickly. In other countries things were different with a third of cases occurring in Ireland in the spring; in Australia they were seen over winter. Practitioners often considered disease occurred on certain pastures but the only literature to confirm this has been a Danish trial where cattle in closed quarters had 8.9% infection compared with 4.9% on open pasture. In the United Kingdom between 20% and 60% of herds were affected each year with 40% never having problems. An incidence of 1-3% was usual. The organisms isolated from cases were *A. pyogenes* 85%, *Peptococcus indolicus* 62%, *Streptococcus dysgalactiae* 24%, micrococci 22% and *Fusiformis necrophorus* 1%. Other countries had found different proportions of organisms but this could be due to the sampling and culture techniques used. It was probable that a major area in the pathogenesis was still unknown as experimentally infection could not be produced with *A. pyogenes* and it appeared an anaerobe was also needed. Flies are related to the peak time of infection. Pathogens could be recovered from *Hydrotaea irritans* 3.3%, *Stomoxys calcitrans* 1.0% and *Hydrotaea meteorica* 2.5%. However it has not been possible to transmit severe mastitis via flies. Thus either the hypothesis that flies are involved is wrong, or occurrence

in the field is rare or the hypothesis is right but aspects of the pathogenesis are missing. This means that at present prevention is by dry cow therapy and fly control.

The influences on the choice of dry cow therapy were described by Declan O'Rourke (Pitman Moore). He described a report on 800 cattle farms with more than 40 head of cattle. Forty-nine percent of farmers used dry cow therapy (DCT) but 41% did not. This was not as bad as it seemed as it included beef herds and when these were eliminated 86% of dairy farmers used DCT and only 14% did not. In larger herds the usage level reached 92%. When the dry period was looked at, 21% had only six weeks and 58% produced the acceptable eight-week interval. Of those not using DCT 70% had used it but had stopped. The reasons given included no need for it (34%), it was expensive (16%) and not effective (11%). When five veterinary surgeons were questioned the number of their dairy farmer clients using DCT was 80-100%. They considered it was mostly used to reduce subclinical mastitis. Three out of four thought it prevented infection at calving and others considered it prevented summer mastitis.

The incidence of clinical mastitis was described by James Booth (Milk Marketing Board, Worcester). He described a joint project with the AFRC, Compton. It was a two-year project to see how farmers reacted to the provision of information on mastitis levels. All farmers were picked as keeping proper records, however one had not recorded cases adequately. Data were collected monthly and entered in the Compton computer. Half the farmers received a copy of their results and the others did not. Three results were provided, the cases of disease and quarters affected monthly, the number of days of milk lost, and a record of number of cases per 100 compared with others. In 1955 there were 122 cases/100 cows, this rose to 153 in 1962-63 and then reduced to 135 in 1966-67, 74 in 1977 and 41 in 1982. In the first year 24 herds were infected and the number of cases per 100 cows varied from five to 102 with a high of 5 cases per 100 cows in January. Twenty-four herds acted as a control group which began with a slightly higher level than the informed group. The level of mastitis was 32% in the fore quarters and 68% in the hind and most outbreaks were in the first three days after calving. Looking at the intramammary tubes used, only four herds used a single product, seven used two types

of intramammary tube but three had used four types. Tetradelta (Upjohn) accounted for 39.3% of tubes and Leo Yellow (Leo) 23.6%. There was no relationship between cell count or milk yield and mastitis level but as herds increased in size less treatment was used. Trying to check up on the results via veterinary practices it was found that 167 tubes had been sold to each practice but only 132 were claimed to be used by the farmer. Turning to the objective of the exercise, Mr. Booth said that levels of mastitis in the informed and control group remained comparable but as the study continued the informed group showed a marked drop in cases.

In a second paper, Declan O'Rourke talked about the preparation of the udder prior to milking. The work was undertaken by the Milk Marketing Board and he reminded the audience that milk cell count (MCC) measures the degree of inflammation of the udder and indicates subclinical mastitis, and the total bacterial count (TBC) shows bacterial contamination of the udder. A study undertaken in 1982 showed that herds with the lowest MCC and TBC were those dry wiping the teats with individual paper towels. However the survey had been undertaken in the summer and at a time when there was the introduction of central testing of milk samples. Thus it was decided to undertake a more extensive survey in 1985-86 involving 236 herds. It was again found that herds dry wiping teats with paper towels had the lowest TBC and MCC.

Acute mastitis with systemic involvement—diagnosis and treatment was described by **Dr. P. White** (Cornell Ambulatory Clinic). Prognosis of severe mastitis was examined in a retrospective study of 88 cows which had shown fever, depression and anorexia with changes in the milk. Thirty-six cows (40.9%) failed to return to milk that lactation. Of these, 17% were culled for hypogalactia, 6.8% died during the outbreak. However 1.4% remained in the herd and of those half produced milk in the affected quarter. Fifty-two cows (59.1%) returned to milk during the lactation in which mastitis occurred, of these 37.5% had milk in the quarter at the next lactation, 10.2% were undetermined and 11.4% were culled, half for low productivity.

The value of bacteriology was assessed. Looking at bacterial sampling, 72 quarters were examined in 55 cows. In sampling within 12 hours of antibiotic treatment 72% were positive for bacteria and 92% were still positive 12-24 hours after therapy. Of the positives, 54% were sensitive to the antibiotic being used and 52% of organisms were Gram-negative. Dr. White then turned to the signs present in coliform mastitis. Twelve clinical findings were examined in 61 cows from which coliform organisms were cultured and 165 cows with Gram-positive organisms. In most cases it was impossible to tell the difference between the two

types of organism although anorexia, depression and low rectal temperature were mainly seen in coliform mastitis. In consequence of the differential problem, often broad spectrum antibiotics were of most use. Blood culture can determine which bacteria are involved in a mastitis with septicaemia. *Bacillus* spp. can be grown from blood from normal cattle and this was also the only organism produced from cows with coliform mastitis and so often now only systemic therapy was used.

The theme of therapy in mastitis was continued by **Professor Jim Bogan** (Glasgow Veterinary School). At present there were about 40 separate treatments for mastitis and the companies made limited profit because of all the competition. The veterinary profession has not put its house in order regarding use of these treatments in the food producing animals. Routine therapeutic agents produce as good a result as other antibiotics. Thus penicillin/streptomycin or penicillin/neomycin, penicillin/framycetin are suitable. If disease continues, cloxacillin can be used. Carbenicillin has major activity against Gram-negative organisms. Persistent mild mastitis is probably due to penicillinase-producing staphylococci.

There are several cephalosporins and these differ in action. The final generation were cephalosporins with good activity against Gram-positive bacteria and resistant staphylococci and less action against Gram-negative bacteria. Second generation cephalosporins such as cefuroxime have activity against both Gram-positive and negative organisms and the third generation, cefoperazone, has only limited activity against Gram-positive and good activity for Gram-negative bacteria. The use of anti-inflammatory agents is still contraindicated. Corticosteroids reduce inflammation but they are also immunosuppressive. It has been found that transit fever's response to corticosteroids tends to increase culling and deaths. Professor Bogan wondered if a similar problem occurred in treating mastitis. Non-steroidal chemotherapy is of use. Parenteral therapy can help, particularly where there is much inflammation so that intramammary treatment cannot penetrate the affected area. Broad spectrum compounds are of use, such as tetracyclines, ampicillin, cepoxycillin or amoxycillin clavulanate. Sulphonamides have limited value as they do not penetrate the udder wall. Dry cow therapy and teat dipping are important in keeping down the levels of subclinical infection. A new longer-acting form of cloxacillin has reduced numbers of beta-lactamase producing staphylococci from 88% to 58%.

The session then ended with a lively question-and-answer session when the 70-strong audience was able to challenge several of the assertions made by the speakers.