

THIS ARTICLE IS SPONSORED BY THE
MINNESOTA DAIRY HEALTH CONFERENCE.



UNIVERSITY OF MINNESOTA

College of Veterinary Medicine

VETERINARY CONTINUING EDUCATION



ST. PAUL, MINNESOTA
UNITED STATES OF MINNESOTA

Diagnosis of Congenital and Inherited Diseases of Dairy Cattle

George Ruth, Lance Buoen, T.Q. Zhang, Al Weber

- I. What to do if confronted with a possible congenital/inherited disease problem.
 - A. Contact an interested person for assistance, e.g. Dr. Brad Sequin, George Ruth
 - Most breed associations consult with Dr. Horst Keipold in Kansas
 - B. Report defects to the breed association and/or A.I. center.
- II. Be cautious when using the terms "congenital" and "inherited" or "hereditary."
 - A. Congenital -animal is born with the problem
 - no implication as to cause
 - condition might be hereditary
 - B. Inherited -the genome is involved
 - genetics definitely implicated
- III. Congenital Problems
 - The animal is born with the problem
 - These problems affect the individual animal by affecting the conceptus while it is *in utero*
 - A. Cause might be hereditary
 - B. Non-hereditary causes (teratogens) are numerous and varied.
 1. viruses
 2. plants
 3. nutrients
 4. chemicals

5. local (*in utero*) environmental situations

C. Determination of the cause of congenital problems can be very difficult because there is sometimes only a short period of conceptus susceptibility to the insulting agent (teratogen)

D. Investigation and diagnosis of these is important in order to eliminate the consequences of implicating the breeding stock.

IV. Inherited Problems

-Problem may manifest itself at any time after the moment of conception.

-Problems originate in the "genome" due to "lesions" at any of several sites.

A. Chromosomes

1. Chromosomal problems are usually manifest as reproductive difficulties.

a. Centric fusion

b. Reciprocal translocations

2. Karyotyping can identify carrier animals and confirm diagnosis in affected animals. [This requires 4 to 5 ml newly drawn heparinized blood held at room temperature--call for more information.]

B. Genes

1. Genes give ultimate rise to enzymes (proteins)

2. Disease examples

a. Bovine Leukocyte Adhesion Deficiency (BLAD)

b. Deficiency of Uridine Monophosphate Synthase (DUMPS)

c. Citrullinemia

d. Congenital Porphyria

I have mentioned mainly well-known diseases of Holstein dairy cattle. Other problems exist in them and other breeds have their own problems, e.g.,

Brown Swiss: -Progressive degenerative myeloencephalopathy (Weavers)
-Spinal muscular atrophy
-Arthrogyrosis

Guernseys: -Hypotrichosis
-Flexural limb deformities

Jerseys: -Bilateral osteoarthritis
-Limber leg
-Jejununal atresia