



Mad Cow-like Chronic Wasting Disease in North American Deer and Elk

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Wild mule deer in Colorado.

Photograph courtesy Colorado Division of Wildlife.

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February 4, 2001 Denver, Colorado - This past week, the United Nations Food and Agriculture Organization (FAO) warned countries around the world to be concerned about the risk of bovine spongiform encephalopathy (BSE) known as mad cow disease. In a formal statement, FAO said: "All countries which have imported cattle or meat and bone meal from Western Europe, especially Britain, during and since the 1980s can be considered at risk from the disease."

The disease is not caused by a virus or bacteria. It's caused by a normal protein prion found in all mammals. But when that prion protein changes shape, it produces Mad Cow Disease in cattle and a new variant of Creutzfeldt-Jakob disease in humans which is 100% fatal. It's a fact that the destructive prions found in sick cattle in England, Ireland, and France match exactly the destructive prions found in about 90 people who have contracted and died from variant-CJD in Europe. In both cattle and people, prions make sponge-like holes in brain and nerve tissue. The time between onset of first disorientation symptoms and death is about six months to a year. But it's thought that people can carry the destructive prion for several years before full blown symptoms erupt. So if a person ate contaminated British beef in 1986, for example, he or she might not get sick for ten or fifteen years, or longer. That's why health officials wonder if we're seeing the tip of an iceberg of cases yet to emerge. And why the American Red Cross has banned blood donations from people who lived and traveled in Britain, France, Portugal or Ireland for six months or more between 1980 and 1996.

Until 1996, medical researchers did not think prion disease could cross from one species to another. The very rare Creutzfeldt-Jakob disease first discovered in Germany in 1920 was thought to affect only people past fifty. So alarm bells went off in 1996 when dozens of young people in England under age 30 were confirmed to have a new variant CJD disease that matched exactly the prions in sick and dying cattle.

Since 1996 in the United States, three young people under age 30 have also contracted CJD disease and died. However, the destructive prions in those American victims did NOT match the variant CJD prions in European victims. That is one of the many confusing mysteries that now challenge prion

researchers around the globe.

If destructive prions can move from infected cattle to humans in Europe, why not in North America, South America and everywhere? That exact concern prompted Canada and the U. S. this week to announce a ban on several more beef imports from Brazil even though, to date, no cases of Mad Cow Disease in Brazilian cattle have been confirmed.

No Mad Cow Disease has been confirmed in North American cattle. The U. S. and Canada acted quickly back in 1986 to ban British meat and animal feed imports when mad cow disease first emerged in Great Britain. But there are animals in North America that are suffering a very similar brain and nerve disease also caused by misshapen prions that wildlife specialists call "Chronic Wasting Disease," or CWD. Fifteen percent of wild deer and some elk in a hot spot between Ft. Collins, Colorado and the Wyoming border have the disease. Other cases have been reported in Nebraska and at breeding farms from New England to Canada. Researchers wonder: Can CWD cross species from deer and elk to humans as mad cow did from cows to people in Europe? So far there is no laboratory evidence that eating venison has caused a variant Creutzfeldt-Jakob disease in humans. But no one yet knows how chronic wasting disease is even transmitted among deer and elk.

I talked this week with Todd Malmsbury at the Colorado Division of Wildlife about why northeastern Colorado might be the epicenter of chronic wasting disease and what the symptoms are.

Interview:

Todd Malmsbury, Chief of Information, Colorado Division of Wildlife, Denver, Colorado: Todd Malmsbury, Chief of Information, Colorado Division of Wildlife, Denver, Colorado: "Chronic wasting disease - the clinical symptoms of chronic wasting disease involve an animal in which its body condition is not in very good shape. It seems to have what we would call an almost 'spaced out' look. It can salivate excessively. Drink excessively. Stumble about. There is a glassy-eyed look to the eyes. The body condition becomes poor fairly quickly. And usually with a matter of weeks, or a few months, after the onset of first symptoms the animal does die. It is an incurable disease. If an animal does develop the symptoms, it does die from this disease.

IT IS A MISSHAPEN PRION-BASED DISEASE EXACTLY LIKE THE PRION BASE IN MAD COW DISEASE AND CREUTZFELDT-JAKOB, BUT THE DIFFERENCE SO FAR IS THAT THE SHAPE OF THE PROTEIN IN CHRONIC WASTING DOES NOT MATCH WHAT HAS BEEN FOUND IN THE THREE PEOPLE WHO HAVE DIED OF CREUTZFELDT-JAKOB WHO ARE YOUNG. THEY DON'T MATCH UP, THE MISSHAPEN PROTEINS BETWEEN DEER AND PEOPLE. There have been no cases in the United States of the new variant Creutzfeldt-Jakob disease which has been found in Britain and Ireland and on the continent of Europe.

WHY DO YOU THINK THAT 1967 AND FT. COLLINS IS SORT OF THE BEGINNING AND EPICENTER DISCOVERY OF CHRONIC WASTING DISEASE?

Looking today at where the percentage of animals with the disease is highest, the largest incidence of the disease, it would appear it might have started very close to the Colorado-Wyoming border. But we'll probably know the answer to that.

I'M READING FROM SOME INFORMATION ABOUT CHRONIC WASTING DISEASE THAT WAS PUT OUT BY APPARENTLY OF SERIES FROM MONTANA, WYOMING, COLORADO, NEBRASKA, DIFFERENT WILD LIFE DIVISIONS. AND HERE IS A QUOTE: "The first case of chronic wasting disease was seen in 1967 in a captive mule

deer at the Foothills Wildlife Research Station operated by the Colorado Department of Wildlife in Ft. Collins and was attributed then by station employees to close confinement of deer to former scrapie pastures or to horizontal transmission from sheep allowed into the pens."

WHAT WAS THE FOOTHILLS WILDLIFE RESEARCH STATION DOING IN 1967?

The same thing it does today. What it is is our research facility where we do a lot of our different studies on deer, most of them involved with nutritional work. And for example, it's a place where we developed the specific food pellets that are used in emergency times when we have severe winter weather. It's that type of work that goes on routinely there and has for many years.

IS IT POSSIBLE THAT THE FOOTHILLS WILDLIFE RESEARCH STATION IN FT. COLLINS MAY HAVE BEEN WORKING WITH GROUND UP BONE, GRISTLE, CARTILAGE FROM SHEEP, CATTLE AND SO FORTH AT THE TIME WHILE THEY WERE TRYING TO WORK UP A FOOD SUPPLEMENT?

So far as I know, they were not working with any animal by-products from domestic wildlife. In fact, the supplements we use are from grain.

THERE MIGHT HAVE BEEN A CHANGE IN THE PROTEIN PRION IN SHEEP, SOME ABERRANT FORM, THAT HAS BECOME THE CHRONIC WASTING DISEASE PRION. BUT NO ONE YET HAS BEEN ABLE TO MAKE THAT KIND OF DIRECT LINK?

There has been no direct link to our knowledge between scrapie and chronic wasting disease.

IN TERMS OF THE STATISTICS THAT YOU HAVE IN COLORADO AND WYOMING - HAVE YOU FOUND THAT YOU HAVE CASES IN ANIMALS THAT EXTEND BEYOND THE DEER TO OTHER ANIMALS YET THAT HAVE COME UP WITH CHRONIC WASTING DISEASE?



Bull elk in Colorado courtesy Colorado Division of Wildlife.

No, the only animals we have seen with chronic wasting disease in Colorado in the wild would be in deer and elk. Certainly in a laboratory setting where you are literally injecting the disease pathogen into the body of, into the brain of, a test animal there have been occasions where test animals have become infected.

Specifically what we're looking at right now in conjunction with some other state and federal agencies and universities is a study in which we are trying to see what sort of transmission there would be between deer that have CWD to cattle because clearly cattle are known to get bovine spongiform encephalopathy (BSE), or Mad Cow Disease.

What we found to date after the 4th year of the studies and again, these are cooperative studies is that direct exposure of diseased deer to a healthy cow has not been found to spread the disease. They've even taken a pathogen and literally put it right into the cow's mouth or into its eyes or nose and it has not caused the spread of the disease. The only way they have been able to induce a

chronic wasting disease-type ailment into cows is to literally take a syringe containing the pathogen and inject it directly into the brain of the animal (cow). On several occasions after many tries, they have been able in that case to induce the illness in cows. But even then, after they have done injections, the animal (cow) has not come up with the specific chronic wasting disease infection. So, the transmission appears to be extremely inefficient even when a healthy cow is in close proximity for an extended period of time with a diseased animal.

ISN'T IT TRUE THAT DEER AND ELK FROM THE AREA OF COLORADO AND WYOMING AND MAYBE NEBRASKA DO GET TRANSPORTED TO FARMS IN NEW ENGLAND AND OTHER PARTS OF THE COUNTRY THAT DO HAVE VENISON FARMS?

There have been animals found in captive breeding farms for elk predominantly in several states and in at least one Canadian province. It's possible that the origination of chronic wasting disease in captive herds may have come from a herd in Colorado or Wyoming, but that is not known. It may be it came from somewhere else. But there is speculation that it did come from Colorado or Wyoming.

WHAT ABOUT CHRIS MELANI? HE'S THE HUNTER IN THE LONGMONT AND FT. COLLINS AREA OF COLORADO. CBS FOCUSED ON HIS EXPERIENCE. I'VE TALKED WITH HIM BRIEFLY. HERE'S AN EXAMPLE OF A HUNTER WHO WENT THROUGH THE PROCESS OF TURNING IN THE HEAD TO THE WILDLIFE COMMISSION AND WAS TOLD THAT UNLESS HE RECEIVED A WARNING THAT THERE WAS CWD IN THIS DEER THAT HE HAD SHOT AND HE GOT A NOTICE WITHIN 3 WEEKS - THAT HE COULD GO AHEAD AND EAT THE MEAT, PROCESS IT. HE AND HIS FAMILY MADE SAUSAGE AND DISTRIBUTED IT AT CHRISTMAS. TWO MONTHS LATER HE RECEIVED THE FORMAL LETTER CONFIRMING THE DEER DID HAVE CWD.

The test was not completed as quickly as we had hoped it would be. The test was completed. They did not, as far as I know, contact us to check on it. They went ahead and did process the animal.

IS IT FAIR TO SAY THAT ANY HUNTER HUNTING DEER AND ELK IN THE FT. COLLINS, WYOMING AND NEBRASKA AREA - WHATEVER THEY SHOOT IS NOT GUARANTEED TO BE HEALTHY UNTIL THEY HAVE A STATEMENT FROM LABORATORY ANALYSIS?

Anyone who hunts deer and elk in northeastern Colorado, particularly deer, should submit that head as we request and as we ask them to do in writing, and if they choose to - and we recommend that they do this - they should wait until they receive notice from us whether or not that animal has the disease. But we are already telling people and have told them for some time that they should not eat animals that are diseased, that the animals they kill - the head should be submitted for testing and we will notify them. If they don't get an answer immediately or want to check on it, they should give us a phone call."

Websites:

<http://www.dnr.state.co.us/wildlife/hunt/huntereducation/chronic.htm>

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