

## Scrapie in Sheep in Sweden

In 1986 scrapie was diagnosed in 2 ewes of Swedish landrace (finn sheep) from a herd south of Stockholm (*Carlsson et al.* 1986). As the diagnosis was based on clinical history and patho-anatomical changes only, inoculation tests in mice and goats were performed to try to verify the diagnosis.

Brain materials from the 2 ewes (number 1 and 2) with clinical signs of scrapie were macerated separately and penicillin/streptomycin was added to the suspensions. In April 1986, 68 newborn mice, strain C57 black, were inoculated intracerebrally with 0.03 ml per mouse, 34 mice per suspension. The mice stayed with their mothers until sex determined. After separation 3-4 mice of the same sex were kept in each cage for the rest of the observation period.

Seven castrated male goats and 1 female, of Swedish landrace were inoculated in May 1986. Under general anaesthesia 0.5 ml of the suspension was placed in one frontal lobe about 3 mm from the midline and 5 mm deep in the brain tissue through a drilled hole in the skull bone. The hole was closed with dental cement. The goats were divided into two equal groups A and B. Goats in group A were infected with suspension from ewe number 1, and goats in group B from ewe number 2. One goat in group A died during inoculation. The two groups of goats were housed separately in different rooms with separate ventilation. Mice and goats were observed regularly for signs of scrapie to appear.

No signs of scrapie were observed in the mice until May 1987 when a mouse died.

The other mice gradually showed aggravating signs of staggering and hyperexcitability. In September 1987 all mice were killed and the brains immediately fixated in formalin. Histopathological examination revealed typical signs of scrapie, such as symmetrical lesions with spongiosis of the CNS tissue and vacuolisation of neurons in the mid-brain, pons and medulla (*Fraser* 1983).

Two goats in group A showed muscle tremour, trembling and shivering resembling scrapie in September 1987. In January 1988 a typical symmetrical alopecia developed in one of these goats. This animal was killed in february 1988 by injecting pentobarbital intravenously. A postmortem examination was immediately carried out. With the exception of alopecia, no macroscopical lesions were found. The brain was immediately fixated in formalin. Five standard transvers sections of the brain, paraffin embedded and H-E-stained, were examined in light microscope (*Barlow & Easter*). Vacuolisation of neurons and spongiform degeneration were seen in the midbrain, pons and medulla (*Fraser et al.* 1986). An unspecific cellular reaction was seen in the meninges.

The third goat in group A started to show mild symptoms of scrapie in January 1988.

In group B one of the animals showed light muscle tremours in October 1987. This condition did not aggravate during the observation time. No other goats in group B showed any signs of scrapie.

In June 1988 all the remaining goats were killed by injecting pentobarbital intravenously. Animals who had shown clinical signs

of scrapie were subjected to histopathological examinations. In 2 of these goats typical scrapie lesions, as described above, were seen.

These inoculation experiments confirm the first diagnosed cases of scrapie in Sweden. The herd where the cases appeared had practically no contact with other sheep since it was established in 1980. Unfortunately it has been impossible to trace the origin of the sheep in the herd. No new cases of suspect scrapie have been found in Sweden even though sheep owners and veterinarians have been notified of the clinical signs to look for.

#### Acknowledgements

The authors wish to thank Dr. David Buxton, Moredun Research Institute, and Dr. Hugh Fraser, Institute of Animal Health, Edinburgh, Scotland for kind assistance in the histopathological diagnoses, and professor Kerstin Olsson for performing intracerebral inoculations of the goats.

Marianne Elvander, Anders Engvall and Berndt Klingeborn,  
National Veterinary Institute,  
Uppsala, Sweden.

#### References

- Barlow RM, Easter BJ: The Neuropathological Examination (A.D.R.A. Moredun Institute, Edinburgh).
- Carlsson U, Elvander M, Segall T, Nyberg G: Scrapie hos får i Sverige. (Ovine Scrapie in Sweden). Sv. Vet. tidn. 1986, 38, 597-601.
- Fraser H: A survey of primary transmission of Icelandic scrapie (rida) to mice. In "Virus Non Conventionnels et Affections du Systeme Nervoux Cential". (Ed. L. Court) Paris: Masson 1983, 34-46.
- Fraser H, McBride PA, Scott JR, Bruce ME: Infectious degeneration of the nervous system. In Advanced Medicine 22, (Ed. Triger D. R.) 1986, 371-384.

(Received October 27, 1988).

Reprints may be requested from: Marianne Elvander, National Veterinary Institute, P. O. Box 7073, S-750 07 Uppsala, Sweden.