

ORAL PRESENTATION

Open Access

# Dogs and echinococcosis in Iceland

Sigurdur Sigurdarson

From Parasite infections of domestic animals in the Nordic countries – emerging threats and challenges. The 22nd Symposium of the Nordic Committee for Veterinary Scientific Cooperation (NKVet) Helsinki, Finland. 7-9 September 2008

## History

Hydatid disease was first described in Icelandic literature about the year 1200. According to the first qualified physician in Iceland, Bjarni Pálsson (1719-1779) was echinococcosis about 1760 one of the most frequent diseases among the human population, and was also commonly observed in sheep and cattle. Autopsies and questionnaires indicate that 20-25% of the inhabitants might have been infested by hydatidosis about 1850. The nature of the disease was still unknown at that time. The dog population was estimated to be 15.000-20.000, or about one dog for every three or four people. At the same time there were in Copenhagen 1 dog for every 30-32 persons. Obviously there were too many dogs in Iceland. The sheep, cattle, dogs and humans lived in close contact. The dogs often shared a room and even bed with the family, and were the best playmate for the children. The people lived mostly in primitive houses at that time and under primitive hygienic conditions. It is therefore not wonder that the hydatid disease flourished as long as the nature of the disease was still obscure.

In 1849 the Danish physician P.A.Schleisner (1819-1900) concluded that one out of every six Icelanders suffered from hydatid disease. In 1862 doctor Harald Krabbe (1831-1917) from the Royal Veterinary and Agricultural University in Copenhagen studied the hydatid problem in Iceland. He found that 28 out of 100 dogs and most of the old sheep and cows that were slaughtered were infested with echinococcus cysts. Experiments he carried out in cooperation with an Icelandic physician Jón C Finsen (1826-1885) proved the relationship between taenias in dogs and the hydatid cysts in humans. Doctor H. Krabbe realized that most important was to inform the people of the nature of the

disease in order to prevent the infestations of humans and animals with eggs of the intestinal parasites of the dog. H. Krabbe was a chief adviser to the Icelandic government on hydatid disease and prophylactic measures in the period 1860-1890. His recommendations were followed strictly for more than 100 years and partially they still are. New infestations by *E. granulosus* practically disappeared in Iceland the decade 1890-1900. That is based on 7333 autopsies of people performed in the period 1932-1966. And based on 15.888 autopsies 1932-1982 only few human infestations occurred after 1900. The most recent human cases are a person born in 1937 who was autopsied in 1960, another person born in 1905 operated 1984 and the third person born in 1920 operated in 1988. In 1863 an autopsy survey of 100 dogs were carried out. *E. granulosus* was found in 28 of them, 75 dogs carried *T. marginata*. In the period one hundred years later 200 dogs were autopsied (1950-1960). *T. marginata* was found in 11 dogs but none of them carried *E. granulosus*. Reports of meat inspectors from Icelandic abattoirs did not record hydatid cysts in cattle, pigs and horses after 1961. However in the period 1953-1979, cysts of echinococcus were recorded in a total of 21 old ewes, all of which came from few farms on 2 small areas in East-Iceland. There was an indication that the parasite had been introduced to the country by an imported dog. After 1979 no hydatid cysts have been found in any animal in Iceland.

## Why so successful control of hydatid disease in Iceland

Echinococcosis is a great public health and economic problem in many countries. It has been extremely difficult to eliminate it in many endemic areas. Apparently it was done in Iceland rather easily. How?

The campaign against hydatid disease in Iceland was for more than one century and partially still is based on Harald Krabbe's recommendations: **1) Successful information to the people.** Most people in Iceland had lost

The Icelandic Food- and Veterinary Authority Austurvegur 64, 800 Selfoss, Iceland

either relatives or friends as a victim to hydatid disease and the memory of this disease was and still is dreaded. When people knew what to do, strong participation of both young and old was easy to activate.

**2) Reduction of the dog population** by taxes on all dogs, higher tax on unnecessary dogs and a ban on keeping a dog without permission. Outbreaks of distemper in 1870, 1888 and 1890 reduced the number of dogs considerably, **3) Preventing the dog gaining access to raw offal and burning cysts in organs** **4) Caution in dealing with dogs**, esp. Children, **5) Yearly anthelmintic treatment of all dogs** after the slaughtering session. Some factors that assisted in the campaign: -Ceasing of milking sheep on the farms, - improvement of the houses and hygiene, -strictly practiced caution on the contact between dogs and animals/people. Building of slaughterhouses all over the country in the period 1900-1920, then slaughtering on the farms almost ceased. The hydatid disease was never found in horses, rodents or in wild animals in Iceland.

Published: 13 October 2010

#### References

1. Pálsson PA: Echinococcosis and its elimination in Iceland. In a book in regi of Ivan Kati'c København Harald Krabbe Dagbog fra Island 2000, 93-100, Ferðasaga(1863, 1870, 1871).
2. Þórarinsdóttir KH: Echinokokkosen i Island og dr. Harald Krabbes indsats for dens bekæmpelse. København OSVAL II – opgave, Københavns University, medicinske fakultet 1999.
3. Dungal N: New Zealand medical journal. 1957, **56**:212-222.
4. Einarson M: Búnaðarrit. 1901, **15**:125-164.
5. Einarson M: Dýralækningabók. Reykjavík 1931, 91-93, 232-235.
6. Finsen J: lagtagelser angaaende Sygdomsforholdene I Island. København 1874, 177.
7. Hlíðar Sig E: Lækning húsdýra Akureyri. 1915, 66-68, 102-104.
8. Jónassen J: Ekinokkogygdommen belyst ved islandske Lægers Erfaring. København 1882, 268.
9. Jónsson V: Skirnir. 1954, **128**:134-175.
10. Jónsson S: Tidsskrift for Veterinærer. 1879, 137-178, 2. Rk., 9 Bd.,
11. Krabbe H: Athugasemdir handa Íslendingum um sullaveikina og varnir móti henni. København 1864, 18.
12. Krabbe H: Helminologiske Undersøgelser I Danmark og paa Island med særlig hensyn til Blæreormlidelserne ..... paa Island. København 1865, 64.
13. Magnússon G: Yfirlit um sögu sullaveiki á Íslandi. Reykjavík 1913, 83.
14. Pálsson PA, Vigfússon H, Henriksen K: Læknablaðið. 1971, **57**:39-51.
15. Sigurðsson J: Nordisk Medicinhistorisk Årsbog. 1970, 182-198.
16. Thoroddsen Þ: Landbúnaður á Íslandi. 1922, 2:73-84.
17. Bang B: Biografier af lærere ved De Danske Veterinærskole. Medlemsblad for Den Danske Dyrægelseforening, 6. Aargang, København 1923, 93-99.
18. Schultz Forlag JH: Dansk Biografisk Leksikon.. Bnd. 13 København 1938.
19. Dungal N: Er sullaveikin að hverfa á Íslandi? Læknablaðið 1942, **28**:121-128.
20. Dungal N: Eradication of Hydatid Disease in Iceland. New Zealand Medical Journal 1957, **56**:212-222.
21. Eschricht D: Afhandling om de Hydatider, der fremkaldte den I Island endemiske leversyge. I: Oversigt over Videnskabernes Selskabs Forhandlinger 1857, 211-239.
22. Faust EC: Echinococcus Disease. Nelson Loose-Leaf Medicine II New York, 1 1920, 433.
23. Fenger E: Plan til en Forelæsnings-Cyclus. Kbh 1843.
24. Fridriksson G: Saga Reykjavíkur 1870-1940. Reykjavík: Iðunn 1994.
25. Garcia LS, Bruckner DA: Diagnostic medical parasitology. 1997.
26. Jónasson J: Íslenskir Þjóðhættir. 3 utg Reykjavík: Ísafoldarprentsmiðja 1961.
27. Jónsson V: Sullaveikirannsóknir Jóns Finsen og Haralds Krabbe. Skirnir 1954, **128**:134-175.
28. Krabbe H: Om Echinokokkerne, I. del I: Ugeskrift for Læger. Række 2 1862, **37**(15):225-235.
29. Krabbe H: Om Echinokokkerne, II. del. I: Ugeskrift for Læger. 2 Række 1862, **37**(16):241-259.
30. Krabbe H: Echinokokkogygdommen på Island. Ugeskrift for læger 1864, **41**(1):1-19, 2. Række.
31. Krabbe H: Blæreormlidelserne på Island og de imod dem trufne Foranstaltninger. Tidsskrift for Veterinærer 1865, **20**:205-222, 2. Række.
32. Krabbe H: Helminologiske Undersøgelser I Danmark og paa Island med særlig hensyn til Blæreormlidelserne paa Island. I: Det Kongelige Danske Videnskabernes Selskabs Skrifter 5. Række, naturvidenskabelig og matematisk Afdeling 1865, 7:347-408, København, 64 pp..
33. Leared A: Athugasemdir um sullaveikina á Íslandi. Íslendingur 1862, **3**:105-106.
34. Leared A: Athugasemdir um sullaveikina á Íslandi. Þjóðólfur 1862, **15**:33-34.
35. Magnússon G: Yfirlit yfir sögu sullaveikinnar á Íslandi. Fylgirit Árbókar Háskóla Íslands fyrir háskólaárið 1912-1913. Reykjavík 1913.
36. Einarsson Matthías: Hvernig fær fólk sullaveiki? Læknablaðið 1925, **11**:98-100.
37. Nielsen JB: Parasitologi – et kompendium. København: FADL's Forlag, 2 1994.
38. Olafsens og Povelsens Reise gennem Island. Sorøe 1772.
39. Pálsson PA, Vigfússon H, Henriksen K: Læknablaðið. 1971, **57**:39-51.
40. Pálsson PA: Echinococcosis and its elimination in Iceland. Hist Med Vet 1976, **1**:4-10.
41. Pálsson PA: Echinococcosis in Iceland – historical review. XVII. International Congress of Hydatology, Limassol, Cyprus, nov. 6-10 1996.
42. Pétursson J: Lækningabók fyrir Almúga. København: Udg. Af Thorsteinn Jónsson 1834.
43. Roberts L, Janovy J: Foundations of Parasitology. Boston: Wm.C. Brown Publishers, 5 1996.
44. Schleisner PA: Island undersøgt fra et lægavidenskabeligt Synspunkt. København: Boghandler C.G.Iversen 1849.
45. Sun T, Rackson M, Farber B: Current status of Hydatid Disease. Digestive Diseases 1988, **6**:170-184.
46. Thorsteinsson B, Jónsson B: Íslandssaga til okkar daga. Reykjavík: Sögufélag 1991.

doi:10.1186/1751-0147-52-S1-S6

Cite this article as: Sigurdarson: Dogs and echinococcosis in Iceland. *Acta Veterinaria Scandinavica* 2010 **52**(Suppl 1):S6.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at  
www.biomedcentral.com/submit

