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Human and animal incidence of brucellosis declining in Spain

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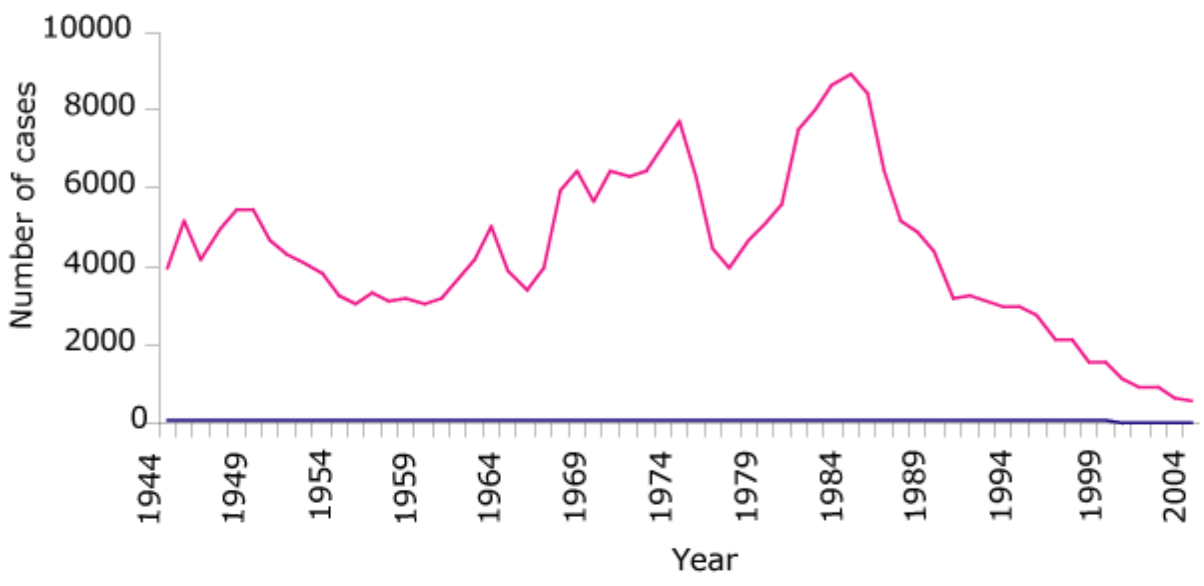
Human brucellosis has been a statutorily notifiable disease in Spain since 1943, and further legislation in 1995 stipulated that information should be collected on individual cases [1]. This information is interpreted together with information gathered by other surveillance systems, such as the outbreak, status reporting and microbiology information systems.

In Spain, brucellosis occurs in epidemic cycles lasting 10 to 14 years. The first of these waves occurred from 1943 to 1955, with a peak in 1949 when 5494 cases were reported (19.83 per 100 000 population); the second, between 1956 and 1977 peaked in 1974 with 7731 cases (21.78 per 100 000 population); and the third wave, which lasted from 1978 to the early 1990s, peaked in 1984 with 8932 cases (22.72 per 100 000 population) (Figure 1).

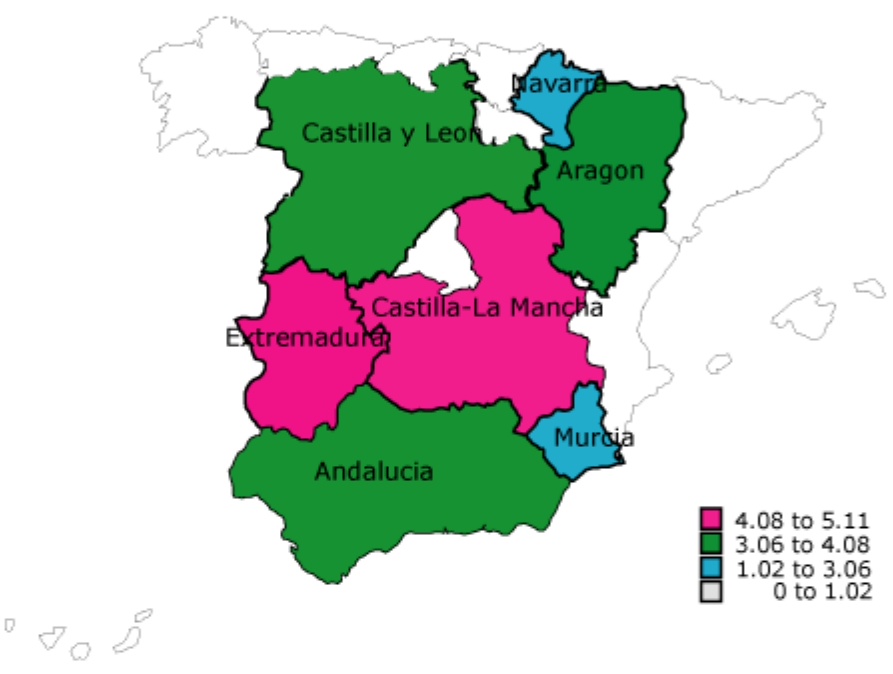
Figure 1. Human Brucellosis incidence in Spain, by year 1944 – 2003



Since 1992, there has been a sharp decline in the number of reported cases, marking the beginning of a new phase of low incidence that has been maintained over the last 4 years. A total of 596 cases were registered in 2004 (1.5 cases per 100 000 population) [2]. This cyclical pattern has undergone a radical change in the last 13 years, and the explanation for this shift in trend is to be found in the disease's behaviour pattern within *Brucella melitensis*' main reservoir, sheep and goats.

The geographical distribution has not varied appreciably in recent years, with the Comunidades Autónomas (autonomous regions) in the centre and south of mainland Spain registering the highest rates, and those along the Cantabrian and Mediterranean coasts having lowest rates (Figure 2).

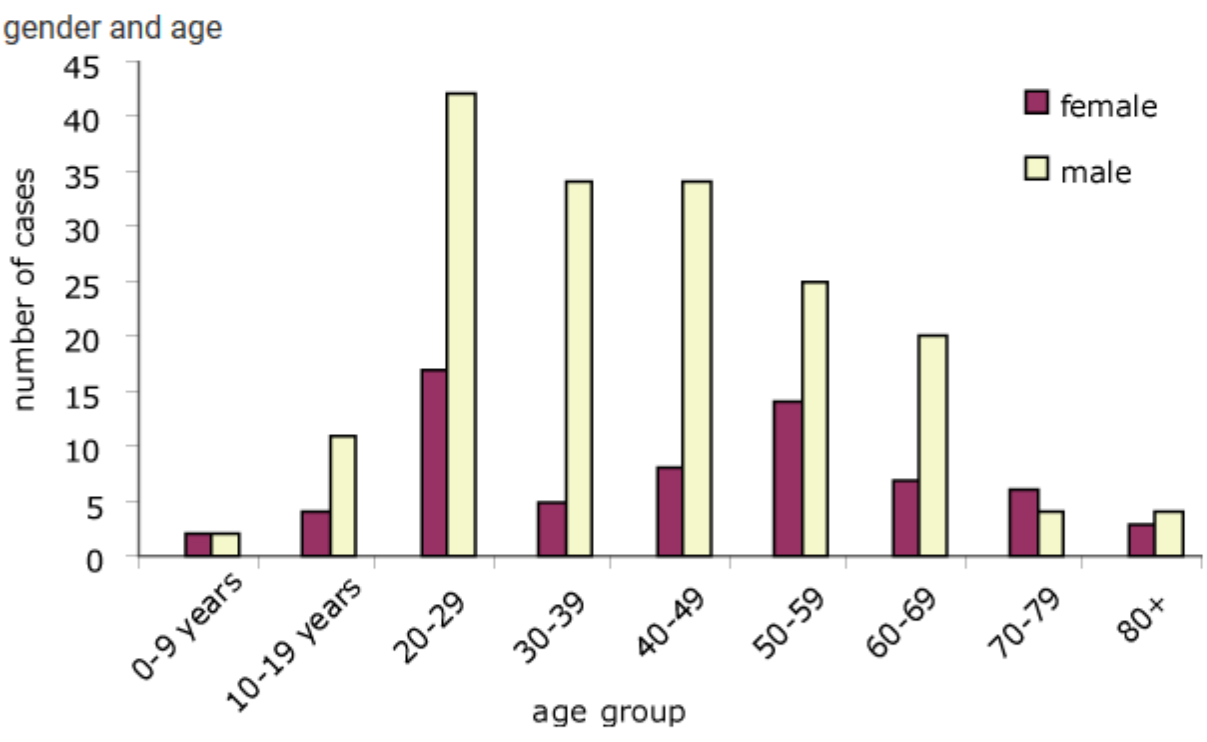
Figure 2. Map of Spain showing geographical distribution of human brucellosis by autonomous region in 2003; rates per 100 000 population in 2003



Outbreaks of varying sizes, with different transmission mechanisms and sources of infection nevertheless occur frequently. Outbreaks arise on livestock farms, often involving small numbers of patients. These may be due to direct contact with infected animals or inhalation of bacteria from animal matter while cleaning stables. They may also occur through consumption of unpasteurised farmhouse homemade cheese made from raw milk. There have also been major outbreaks caused by consumption of so-called 'semi-artisan' cheese that is sold in markets [3]. There is also a risk to those working in abattoirs where animals testing positive are sent for slaughter [4]. A total of 143 outbreaks involving almost 1000 human cases were reported from 1999 to 2003.

From 1989 to 2003, 1845 cases of confirmed brucellosis were reported to the microbiology information system. Brucellosis tends to affect adult males more, with a male-female ratio of 2.6 to 1; the age group most affected is 20-29 years, which accounts for 21% of all patients whose age is known (Figure 3).

Figure 3. Human brucellosis cases reported to the microbiology information system, 1999-2003: distribution by gender and age



The disease in animals

In 1993, 28% of all farms tested had positive animals, and 3% of all animals tested were positive. Ten years later, these figures had fallen to 6% of all farms and 0.9% of all animals testing positive [5].

The introduction of European Community disease control policies in ruminants [6] led to the development of the Spanish national bovine brucellosis and national ovine and caprine brucellosis eradication programme (Programa Nacional de Erradicación de la Brucelosis Ovina y Caprina) [7]. This annual programme, supported by European Union funding, monitors disease status on farms with cattle, sheep and goats. Sheep and goats are the primary reservoir for *Brucella melitensis*, which infects humans and thus can constitute a major public health problem.

The programme also involves vaccination of young animals (age 3-6 months, with REV-1), serological testing of specimens from animals older than 18 months, the obligatory slaughter of positive animals, and compensation for the owners of positive sheep and goats which were slaughtered. The results of the programme, published by the Ministry of Agriculture's Red de Alerta Sanitaria Veterinaria (Veterinary Health Alert Network, RASVE) [7](, indicate that these actions have led to a decline in the prevalence of the disease as well as the number of farms on which infected animals have been detected across Spain.

Conclusion

Brucellosis monitoring and eradication activities targeted at domestic herbivores appear to be having a direct, positive influence on reducing human incidence of the zoonosis that currently accounts for the highest number of human cases in Spain.

Adapted from reference 2 by the authors

References:

1. *Real Decreto 2210/95 por el que se crea la RED Nacional De Vigilancia Epidemiologica* [Royal decree 2210/95 for the creation of the national epidemiological surveillance network] Madrid: La Ministra de Sanidad y Consumo; 22 December 1995.(http://www.juridicas.com/base_datos/Admin/rd2210-1995.html)
2. Sánchez Serrano LP, Ordóñez Banegas P, Díaz García MO, Torres Frías A. Vigilancia de la brucelosis. *Boletín Epidemiológico Semanal* 2004; 12(19): 209-212. (http://193.146.50.130/htdocs/bes/bes0439.pdf)
3. Méndez Martínez C, Páez Jiménez A, Cortés Blanco M, Salmoral Chamizo E, Mohedano Mohedano E, Plata C, et al. Brucellosis outbreak due to unpasteurized raw goat cheese in Andalucia (Spain), January - March 2002. Euro Surveill 2003; 8(7-8): 164-168. (http://www.eurosurveillance.org/em/v08n07/0807-223.asp)
4. Rodríguez Valín ME, Pousa Ortega A, Pons Sánchez C, Sánchez Serrano LP, et al. La brucelosis como enfermedad profesional: estudio de un brote de transmisión aérea en un matadero. [Brucellosis as an occupational disease: study of an airborne transmission outbreak in a slaughterhouse] [in Spanish, with English abstract]. Rev Esp Salud Pública 2001;75(2):159-70. (http://www.scielosp.org/pdf/resp/v75n2/v75n2a08.pdf)
5. Martínez Navarro F, Sánchez Serrano LP, Larrosa A. Estudio Epidemiológico de la Brucelosis en España. In: *Manual de Brucelosis*. La Junta de Castilla y León: Consejería de Sanidad y Bienestar Social; 2001. p63-77. (www.jcyl.es/jcyl-client/jcyl/images?idMmedia=2645)
6. 90/242/EEC: Council Decision of 21 May 1990 introducing a Community financial measure for the eradication of brucellosis in sheep and goats. Official Journal of the European Union 1990: L140;01/06/1990. (http://europa.eu.int/eur-lex/lex/LexUriServ/LexUriServ.do?uri=CELEX:31990D0242:EN:HTML)
7. Programa Nacional de Erradicación de la Brucelosis Ovina y Caprina. Ministerio de Agricultura, Pesca y Alimentación. Red de Alerta Sanitaria Veterinaria (RASVE) Ministerio de Agricultura. (http://rasve.mapa.es/)