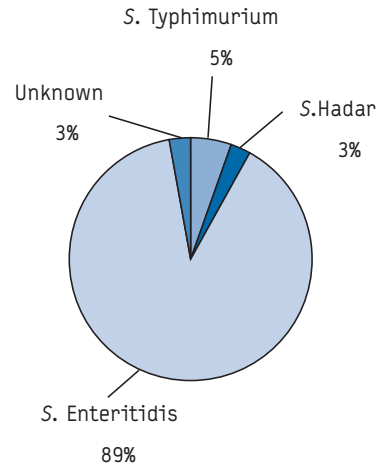
FIGURE 4

Foodborne disease outbreaks associated with eggs and egg products, by serotype, Spain, 2002-2003



Source: National Salmonella and Shigella Reference Laboratory, National Microbiology Centre

Conclusions

No changes were observed in the pattern of presentation of foodborne disease outbreaks linked to consumption of eggs and egg products in 2002 and 2003 in relation to previous years [2]. Egg-or egg-product-related outbreaks accounted for 41% of all foodborne disease outbreaks reported to the Outbreak Reporting System in the study period. Salmonella was the causative agent in 85% of outbreaks associated with consumption of eggs, with Enteritidis being the most frequent serotype. The household setting is the predominant place of presentation of reported outbreaks in both the Outbreak Reporting System and the National Reference Laboratory. Outbreaks due to eggs and egg products tend to be more frequent in the months with the highest ambient temperatures, with the principal contributing factors being linked to inadequate food storage temperatures.

The rising trend in the number of outbreaks (both community and household) reported to the Outbreak Reporting System from 1999 to 2003 leads us to believe that, notwithstanding the improvements in the surveillance system in some of the country's Autonomous Regions, no changes have been achieved in the population's habits with regard to basic egg-related salmonellosis prevention measures and, more seriously, that there is continuing non-compliance with the regulations designed to ensure prevention in the food catering sector. With the aim of reducing the incidence of these types of outbreaks, in 2003, the Ministry of Health & Consumer Affairs and the Ministry of Agriculture implemented a salmonella control programme in eggs and egg products [7] which lays down action proposals throughout the food chain.

In contrast to the Outbreak Reporting System, the results obtained by the National Reference Laboratory show a decrease in outbreaks across the study period of over 50% compared to previous years [2] and this substantial decline is again in evidence when the two study years are compared. This could be due to data processing changes implemented since 2002 and could reflect worse compliance in terms of the variables for 'linked to outbreak' and 'food'. Another explanation could be that data from only a small proportion of outbreaks in Spain are collected by the National Reference Laboratory, and a relatively small change in the numbers may result in a large percentage change.

There are currently plans to integrate the data from the National Reference Laboratory and the Outbreak Reporting System, in order to improve knowledge of the risks associated with the appearance of new specific salmonella serotypes.

This article was translated and adapted by the authors from reference 1.

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RESURGENCE OF PERTUSSIS IN NORTHERN PORTUGAL: TWO SEVERE CASES IN VERY YOUNG CHILDREN

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Between December 2004 and March 2005, two cases of pertussis (whooping cough) in unvaccinated infants, both under two months of age, were reported to the same municipal health authority in the north of Portugal. These cases are part of a changing epidemiological pattern of infection due to *Bordetella pertussis* in Portugal.

The Portuguese national vaccination programme's recommended schedule includes five doses of diphtheria-tetanus-pertussis [1,2] whole cell (DTPw) pertussis vaccine. The first dose is recommended at two months of age and the fifth at 5-6 years of age [1]. Vaccine coverage in Portugal is high [3] and pertussis has been a statutorily reportable disease for many years. Reported cases of pertussis decreased since the 1960s and reached very low levels in the period 1993-2003 [4,5] (Table 1). In northern Portugal, fewer than 10 cases have been reported each year from 1993 to 2002 to zero cases in 2003; there was a clear resurgence in 2004, when 26 cases were reported (Table 1), with 2 deaths in children below 2 months of age. No deaths were reported from 2000 to 2003. Both in the north, and in Portugal as a whole, most reported cases occurred in the first year of life. In the northern region, most of these cases in the first year of life were observed in infants under the age of six months, and no cases occurred in the eleventh and twelfth months of life (Figure 1).

In the north of Portugal, data on previous vaccination against pertussis was available for the 29 cases in the first year of life reported in the period 2000-2004: none of the 6 infants who were below the recommended age to receive the first dose of DTPw had been vaccinated before the onset of the disease; of the remaining 23, only 7 had been vaccinated. Staff responsible for vaccination are carrying out detailed investigations of the pertussis cases that might have been prevented by vaccination.

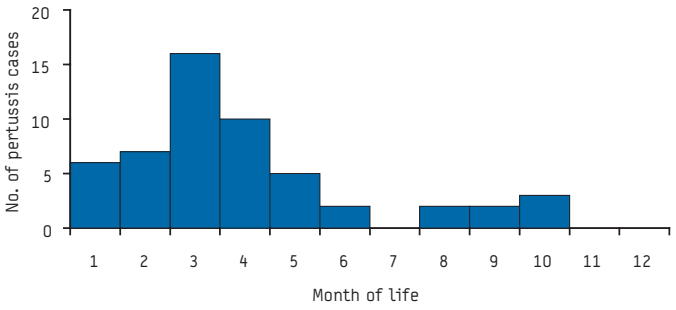
TABLE 1

Number of reported cases of pertussis in Portugal and in the northern region, in the period 1993-2004. All ages and in the first year of life

Year	Portugal		Northern region of Portugal	
	All ages	< 1 year	All ages	< 1 year
1993	26	Not available	5	2
1994	19	Not available	4	4
1995	19	Not available	5	4
1996	16	14	7	7
1997	11	9	1	1
1998	9	6	6	3
1999	12	11	3	3
2000	22	13	4	3
2001	2	2	1	1
2002	2	2	1	1
2003	4	4	0	0
2004	Not available	Not available	26	24

FIGURE

Reported cases of pertussis in the first year of life, northern Portugal, 1993-2004. (n=53)



Sources: DGS and CRSP-N, Portugal

Case 1

This case was in a baby boy who died on 16 December 2004, following illness onset on 7 December and hospital admission on 14 December. The syndrome was typical of pertussis and the case was confirmed after positive polymerase chain reaction (PCR) testing of a nasopharyngeal specimen. Blood samples from the three household contacts in March 2005 were tested for specific IgM and IgG using ELISA (Pertussis Toxin® – Genzyme Virotech GmbH). On the basis of reported cough in the mother during the week before onset of symptoms in her child and serological results (Table 2) it is very likely that the mother transmitted *B. pertussis* to the baby before the recommended age of vaccination with DTPw.

Case 2

This case was in a baby girl, whose cough began on 27 February 2005 and became intense on 4 March, and who was admitted to hospital the next day. The case was confirmed after a positive PCR test (nasopharyngeal specimen). The baby was put into isolation, treated with erythromycin and cefotaxime, and recovered. The other children in the ward and the household contacts received azithromycin. Blood samples were collected from the five household contacts (10/05/2005) and tested for specific IgM and IgG using ELISA (Pertussis Toxin® – Genzyme Virotech GmbH). On the basis of reported cough in the mother during the week before onset of symptoms in her child and serological results (Table 3) it is very likely that the mother transmitted B. pertussis to the baby. The first dose of DTPw, given to the child after the first mild symptoms, did not prevent the occurrence of the typical pertussis syndrome.

TABLE 2

Vaccination history and serology among household contacts of case 1

Household member	Age	Vaccination history	Date of onset/ admission to hospital	IgG (*) (U/ml)	IgM (*) (U/ml)
Infant	1 month	BCG and hepatitis B vaccine October 2004	Symptom onset 7 Dec. 2004, admission to hospital 14 December 2004	Not available	Not available
Mother	17 years	5 doses of DTPw in childhood (final dose in December 1996)	Cough in the week before onset in the child	Positive 42.1	Positive 12.3
Father	25 years	3 doses of DTPw in the first year of life	No recent respiratory signs or symptoms	Positive 13.9	Borderline 10.1
Aunt	44 years	No vaccines recorded before 1974. Other vaccines recorded after that	No recent respiratory signs or symptoms	Positive 11.6	Negative 8.3

(*) Specific B. pertussis antibodies; positive if U/ml> 11.0

TABLE 3

Vaccination history and serology among household contacts of case 2

Household member	Age	Vaccination history	Date of onset/admission to hospital	IgG (*) (U/ml)	IgM (*) (U/ml)
Infant	1 month	BCG and hepatitis B vaccine January 2005 DTPwHib and OPV on 3 March 2005	Symptom onset 27 February 2005, admission to hospital 5 March 2005	Not available	Not available
Mother	39 years	DTPw: 3 doses in 1967); 1 dose in 1968 - Other vaccines	Persistent cough from 2 weeks before child's date of onset	Positive 30.2	Positive 12.8
Father	45 years	Never vaccinated against pertussis Other vaccines	No recent respiratory signs or symptoms	Positive 13	Borderline 9
Brother	12 years	Five doses of DTPw (final dose March 2003) - Other vaccines	No recent respiratory signs or symptoms	Positive 24.4	Borderline 9.9
Brother	9 years	Five doses of DTPw (final dose February 2001) - Other vaccines	No recent respiratory signs or symptoms	Positive 12	Borderline 10.1
Sister	6 years	Five doses of DTPw (final dose February 2004) - Other vaccines	No recent respiratory signs or symptoms	Positive 17.6	Borderline 9.6

(*) Specific B. pertussis antibodies; positive if U/ml> 11.0

Discussion

These findings are consistent with previously published observations: unvaccinated infants get classic pertussis symptoms [6] and infection results from exposure to *B. pertussis* transmitted by siblings or parents [6-8]. They are also consistent with the reported resurgence of pertussis in other countries with high vaccination coverage [9]. In common with surveillance scientists elsewhere, we are not sure whether the availability of PCR as a diagnostic tool has contributed to the increase of reported pertussis cases in the north of Portugal [10] Pertussis vaccination appears to have limited impact on interrupting transmission, as both natural infection and vaccination protect for a limited time only [11]. A well-documented gradual decrease in protection leads to a wide variation in severity of symptoms, posing a major challenge to diagnosis and reporting systems, and hampering surveillance [12]. The data reported here contribute to the evidence which suggests that childhood vaccination does not generate enough herd immunity to prevent infection in infants who are too young to be vaccinated.

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