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OUTBREAKS OF FOOD-BORNE VIRUSES

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A large proportion of outbreaks of gastroenteritis are caused by viruses. Rotavirus and calicivirus are the most prevalent causes, but adenovirus and astrovirus are also among the common gastroenteritis viruses. Calicivirus was formerly known as Norwalk virus, Norwalk-like virus or small round-structured virus. The most common cause of outbreaks of gastroenteritis in the population is calicivirus, which is thought to be the cause of approx. 60% of viral outbreaks of gastroenteritis in Sweden and approx. 80% of food-borne outbreaks in Holland.

Clinical symptoms

It is possible to identify outbreaks of calicivirus gastroenteritis if all of the so-called Kaplan criteria are present, Table 1.

Table 1. Kaplan criteria to identify outbreaks caused by calicivirus

- Faeces culture negative for bacteria
- Vomiting in > 50% of the patients
- Average duration of illness 12-60 hours
- Incubation period, if known, 15-77 hours, usually 24-48 hours

Other characteristics, though not obligatory, may be episodes of explosive vomiting, which may be the only symptom, usually non-bloody diarrhoea, fever and a high secondary infection rate.

Transmission

In most cases, viruses are transmitted by the faecal-oral route. Airborne infection also occurs by the formation of aerosols from vomitus. Calicivirus is very resistant and can survive for a long time in the environment, for example on door handles and water taps. Unlike bacteria, viruses cannot "grow" in food. Food is usually contaminated with virus either from a virus-infected person who prepares the food or from sewage water. The most common foodstuffs involved in outbreaks are:

- shellfish such as oysters, mussels, clams
- fresh or frozen berries and vegetables, presumably watered with contaminated water
- contaminated water or ice cubes.

Epidemiological factors

The Dept. of Virology at SSI has processed data collected by the Danish Veterinary and Food Administration and classified the food-borne outbreaks by agent, Fig. 1.

As surveillance is constantly improving, the proportion of outbreaks caused by viruses is increasing. In the year 2000, at least 40% of outbreaks were due to calicivirus, which represents 60% of the reported patients. Most outbreaks were due to an infected food handler. In the year 2000, the Dept. of Virology examined 1,100 patient specimens, and 250 (23%) were positive for calicivirus. The season for calicivirus is from September to February.

The spotlight fell on calicivirus infections in January and February 2001, when almost 300 people spontaneously reported illness after eating contaminated, imported oysters. A few cases in relation to the same batch of oysters were reported from other countries.

Diagnosis of calicivirus

Calicivirus cannot be cultured, but can be detected by electron microscopy, and virus RNA can be detected by PCR. In order to improve sensitivity and to be able to type viruses, the Dept. of Virology has used PCR as a primary investigation since December 2001. On suspicion of calicivirus infection, a faeces sample should be submitted, and the request form should specify "Test for calicivirus". Unfortunately, samples sent exclusively for bacteriological examination cannot subsequently be tested for viruses.

Surveillance of food-borne outbreaks

On suspicion of a food-borne outbreak, the Medical Officer of Health and the Regional Food Inspectorate can be contacted. Outbreaks must be notified on form 1515. On suspicion that the outbreak is due to calicivirus, both the suspected product and

the patient's faeces should be examined. The suspected product can be examined by the Danish Veterinary and Food Administration after arrangement (tel. +45 3395 6561). The faeces sample should be sent to the Dept. of Virology. It is important that the words "food poisoning" or the name of the product in question be written on the request form. If PCR is positive, calicivirus can be typed by blotting or sequencing. This will make it possible to compare the epidemiological and molecular data from Denmark with corresponding data from other European countries. Denmark participates in the European "Food-borne Viruses in Europe" network, whose objective is to collect information regarding potential outbreaks of food-borne viruses in order to identify contaminated food and new virus types all over Europe.

(F.-X. Hanon, Dept. of Epidemiological Research, B. Böttiger, Dept. of Virology)

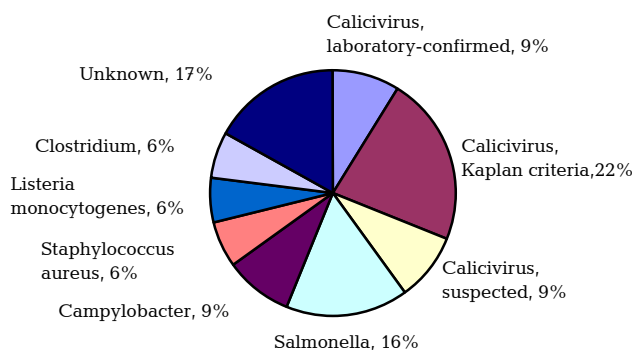
EUROPEAN TRAINING PROGRAMME FOR EPIDEMIOLOGISTS

It is again possible to seek admission to a two-year training programme for epidemiologists, EPIET (European Programme for Intervention Epidemiology Training). The programme starts in September 2002 and includes field epidemiology, outbreak tracing, disease surveillance, control of infectious diseases, etc. Those admitted to the programme will be stationed at a department of epidemiology in an EU country or in Norway. Applications to the Dept. of Epidemiology. Closing date for applications is 15 February 2002.

(Dept. of Epidemiology)

23 January 2002

Fig. 1. Food-borne outbreaks in Denmark, classified by aetiology, 2000. A total of 35 outbreaks. (Source: The Danish Veterinary and Food Adm.)



Patients with confirmed *Listeria monocytogenes* infection

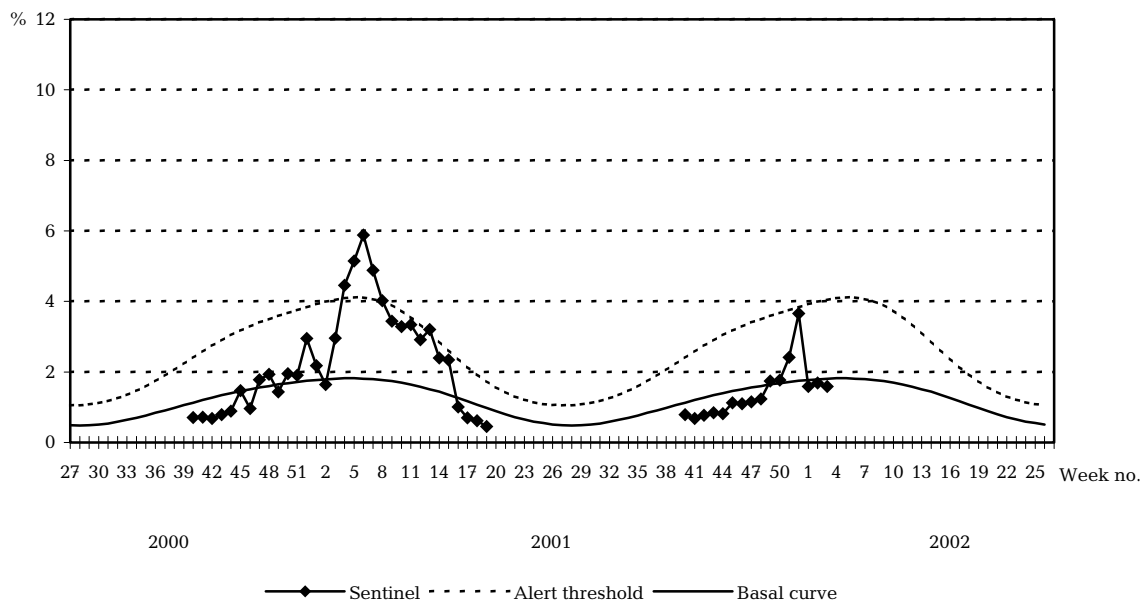
2001 (4th quarter and whole year) compared with 2000 (4th quarter and whole year)

	4th quarter 2001	4th quarter 2000	Whole year 2001	Whole year 2000
Mother/child infection	1	1	3	7
Septicaemia	7	5	25	24
Meningitis	3	2	10	8
Other	0	0	0	0
Total	11	8	38	39

(Dept. of G-I Infections, Dept. of Clinical Microbiology)

Sentinel surveillance of influenza activity

Weekly percentage of consultations, 2000/2001/2002



Sentinel: Influenza consultations as % of total consultations
Basal curve: Expected frequency of influenza consultations under non-epidemic conditions
Alert threshold: Possible incipient epidemic

(Dept. of Epidemiology)