EPI-NEWS

NATIONAL SURVEILLANCE OF COMMUNICABLE DISEASES

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BACTERIAL INFECTIONS IN BITE WOUNDS

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In Denmark, bite wounds – including human bite wounds – cause about 1% of all casualty ward visits. The frequency of bacterial infections after animal bites is reported to vary considerably, from approx. 2% to about 60%.
In bite wound infections, a host of several bacteria are typically found. Generally, the bacteria observed are those occurring in the skin or the oral cavity. The most frequently occurring bacteria are various species of streptococci and staphylococci.

Bite wound bacteria

Capnocytophaga canimorsus
Dog bites (and other close contact with dogs and possibly cats) may cause C. canimorsus infection.
After the bite or simply after a dog has licked a pre-existing wound, the bacteria can – in just a few days – spread to the blood and cause a clinical picture comprising severe sepsis and in some cases cerebral haziness, haemodynamic shock and possibly disseminated intravascular coagulation.
Despite relevant antibiotic therapy, complications may occur in the form of organ failure possibly affecting various organs, and in some cases leading to multiple organ failure.
Early antibiotic therapy will cause many cases to improve clinically and in such cases the prognosis is good.

Pasteurella species
After animal bites various Pasturella species are common (P. canis after dog bites, P. multocida after dog and cat bites, and P. aerogenes after swine bites) as these occur in the oral cavity of the animals mentioned.
The bacterium frequently causes local abscesses, and infection may spread and cause osteomyelitis, septic arthritis, endocarditis, meningitis and sepsis, EPI-NEWS 37/05. Invasive disease is associated with considerable mortality, most frequently in connection with severe underlying disease.

Bartonella henselae
B. henslae causes cat scratch disease after cat bites or scratching, EPI-NEWS 2/05. The bacterium cannot be cultured using standard media, but should be detected by PCR.
Cat scratch disease is generally a self-limiting, local condition presenting as swelling of the draining lymph nodes. In rare cases, serious abscesses, endocarditis or other deep infections are found.

Anaerobic bacteria
A range of anaerobic bacteria normally found in the gastrointestinal tract of animals may cause infection in bite lesions. In all probability, such bacteria are frequently missed in connection with routine cultures. They are normally sensitive to standard antibiotics and consequently there is no need for drugs with a special anaerobic treatment spectrum.

Clostridium tetani
Bite wounds are frequently rather lacerated and may comprise minor necroses and closed anaerobic pockets. This provides ideal conditions for C. tetani, which may contaminate wounds in case of contact with soil. It is therefore always relevant to consider the patient's tetanus immunity status. If more than ten years have passed since the previous vaccination, or if the patient's immunity status is unknown, post-exposure prophylaxis is relevant, EPI-NEWS 7/04.

Francisella tularensis
The rabbit fever bacterium F. tularensis may in very rare cases transfer in connection with cat bites. The bacterium is present in Denmark, particularly in Bornholm, and is normally transferred from rodents and ticks, EPI-NEWS 6/09.

Bacteriological diagnosis
Where abscesses and similar infections are found after animal bites, the association is generally evident.
Which specific bacteria are involved may be determined by culture. Many of the bacteria associated with animal bites are relatively delicate and tend not to survive outside the body. Swabs from wounds are performed using standard swabs which should be sent in a suitable medium such as Stuart's transport medium. Some of the mentioned bacteria require a special combination of culture medium and atmospheric composition to grow in vitro. The chance of detecting such bacteria therefore increases if the laboratory is informed that the wound is a bite lesion caused by a specific species of animal. The laboratory may then adapt growth conditions accordingly.
Sepsis is detected through blood culture. In bacteraemia cases, blood cultures typically turn positive within 1-2 days and all tests are concluded within another 2-4 days.
In cases where bacterial growth is not an option, e.g. because antibiotic therapy has been initiated, it may be possible to detect bacterial DNA using PCR. On the basis of the DNA base sequence, the bacterium causing the infection can be identified. This test is only performed routinely at the SSI.

Treatment of bacterial infections
Abscesses should be surgically incised and drained. Antibiotic treatment should be targeted specifically at the relevant bacteria and at the localizations to which the infection has spread. In the overwhelming majority of bacterial infections caused by animal bites, penicillin is very effective. In case of penicillin allergy, macrolides or other drug groups will generally substitute. In case of serious infections in severely ill patients where admission to hospital is required, the first-line treatment will typically be a broad-spectrum cephalosporin or carbapenem, and subsequently therapy will be targeted specifically at the causative bacterium once it has been identified and resistance has been determined.

Prophylaxis in bacterial and viral infections
Bite wounds should always be cleaned thoroughly. Routine prophylactic use of antibiotics after animal and human bites is controversial. In cases with superficial wounds, such treatment is not recommended in Denmark. The recommendation for deep wounds is a single penicillin G injection 2 mio IU, intramuscularly. Tetanus and rabies prophylaxis should be considered on a case-to-case basis, EPI-NEWS 7/04 and 10/09.

Commentary
Infections presenting after dog and cat bites are frequently caused by the organisms of the animal's oral cavity. Generally, the infections give rise to abscesses, but other manifestations including sepsis also occur. The majority of infections are sensitive to penicillin.
Patients presenting with signs of infection after animal bites should see a physician. In case of local reactions with no general effects, the GP should be contacted during normal working hours. In cases with comprehensive lesions and/or systemic effects, patients should contact an emergency call service or casualty ward as quickly as possible.
(M. Kemp, DBMP, P.H. Andersen, Department of Epidemiology)

18 March 2009

Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2009 figures are preliminary)

Table 1	Week 11 2009	Cum. 2009 [1]	Cum. 2008 [1]
AIDS	0	6	10
Cholera	0	0	0
Creutzfeldt-Jakob	0	4	1
Food-borne diseases	11	82	67
of these, infected abroad	5	14	17
Gonorrhoea	16	118	72
Hepatitis A	0	7	14
of these, infected abroad	0	5	6
Hepatitis B (acute)	0	5	3
Hepatitis B (chronic)	19	35	44
Hepatitis C (acute)	1	4	3
Hepatitis C (chronic)	38	80	94
HIV	4	53	41
Legionella pneumonia	4	26	20
of these, infected abroad	0	2	10
Leptospirosis	0	0	1
Measles	0	8	4
Meningococcal disease	0	16	19
of these, group B	0	6	7
of these, group C	0	6	4
of these, unspec. + other	0	4	8
Mumps	0	2	12
Neuroborreliosis	1	3	18
Ornithosis	0	0	1
Pertussis (children < 2 years)	6	22	21
Purulent meningitis			
Haemophilus influenzae	0	2	0
Listeria monocytogenes	0	2	1
Streptococcus pneumoniae	0	21	26
Other aethiology	0	2	10
Unknown aethiology	0	3	7
Under registration	6	24	-
Rubella (during pregnancy)	0	0	0
Rubella (congenital)	0	0	0
Shigellosis	1	20	15
of these, infected abroad	0	19	13
Syphilis	6	52	25
Tetanus	0	0	0
Tuberculosis	15	93	86
Typhoid/paratyphoid fever	0	3	8
of these, infected abroad	0	0	6
VTEC/HUS	2	25	22
of these, infected abroad	0	6	6

Table 1, comments

In 2009, none of the following have been reported: Anthrax, botulism, cholera, diphtheria, haemorrhagic ffever, leprosy, plague, polio, rabies, typhus exanthematicus

1) Cumulative no. 2009 and corresponding period 2008

Selected laboratory diagnosed infections

Number of specimens, isolates, and/or notifications received at Statens Serum Institut

Table 2	Week 11 2009	Cum. 2009 [2]	Cum. 2008 [2]
Bordetella pertussis			
(all ages)	2	31	33
Gonococci	10	87	86
of these, females	1	17	17
of these, males	9	70	69
Listeria monocytogenes	0	13	5
Mycoplasma pneumoniae			
Resp. specimens *3)*	1	22	34
Serum specimens *4)*	4	40	40
Streptococci *5)*			
Group A streptococci	4	53	35
Group B streptococci	1	19	23
Group C streptococci	1	7	3
Group G streptococci	1	35	24
S. pneumoniae	21	364	295

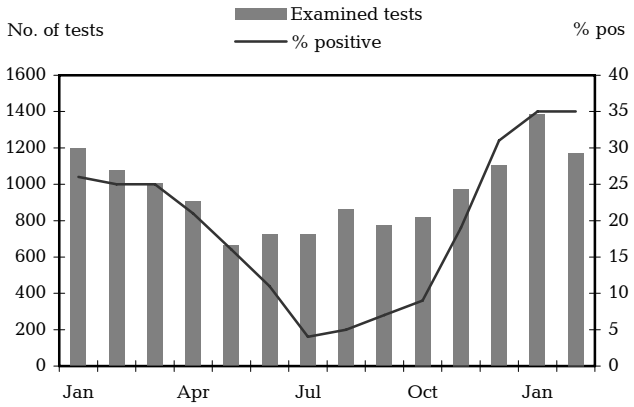
Table 3	Week 9 2009	Cum. 2009 [2]	Cum. 2008 [2]
MRSA	31	145	88
Pathogenic int. bacteria [6]			
Campylobacter	37	244	301
S. Enteritidis	4	38	55
S. Typhimurium	18	175	57
Other zoon. salmonella	11	105	133
Yersinia enterocolitica	5	33	38
Verocytotoxin-prod. E.coli	2	20	20
Enteropathogenic E. coli	1	24	13
Enterotoxigenic E. coli	4	30	54

Tables 2 & 3, comments

2) Cumulative no. 2009 and corresponding period 2008
3) Respiratory specimens with positive PCR
4) Serum specimens with pos. complement fixation test
5) Isolated in blood or spinal fluid
6) See also www.germ.dk

Norovirus 2007-2008

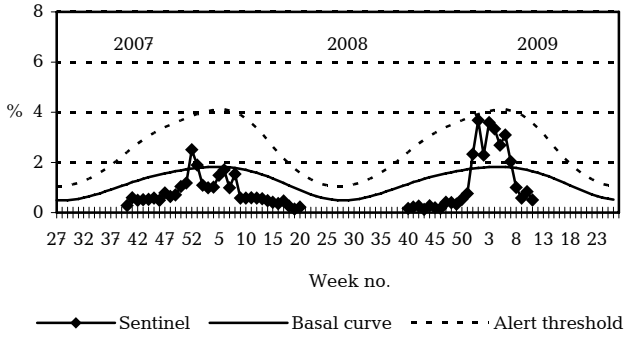
Examined samples and % positive, Jan 08 - Feb 09



Samples from clinical microbiology departments at Odense University Hospital, Copenhagen University Hospital, and the Department of Virology, SSI

Sentinel surveillance of the influenza activity

Weekly percentage of consultations, 2007/2008/2009



Sentinel: Influenza consultations (as percentage of total consultations)

Basal curve: Expected frequency of consultations under non-epidemic conditions

Alert threshold: Possible incipient epidemic

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