

FMD VIGILANCE IN FRANCE

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INTRODUCTION

- Last outbreaks : **1981**
- **Over 1600 outbreaks in the U-K**
- 1 in Ireland, 2 in France, 26 in the NL
- What happened ?
- How can we explain it ?
- **What lessons for tomorrow ?**
- Where there loopholes in our plan ?

REMINDERS 1

- FMD : viral disease, genus *Aphthovirus*, Picornaviridae, RNA
- **Historical and economical importance**
- **7 types** (A, O, C, SAT1, SAT2, SAT3, Asia1) et great antigenical **variability**
- Main sanitary risk (**economics**)
- **No danger for man**

FMD IN MAN ?

- **Anecdotal**
- Vesicles within the mouth : many possible causes
- **Enterovirus**
- Caustic foodstuffs
- All the known cases (<50) ancient
- Nothing now, in 1981, nor in 1967-68

FMD IN THE ANIMAL

- Fever and vesicles (mouth, foot, udder)
- **Evolution, usually short**
- Healing within 10 days
- Possible bacteriological surinfections
- **Mortality in young**
- Production losses not reversible
- **Virus carriage**

REMINDERS 2

- Sensitive species : **artiodactyla mammals** (practically : ruminants and swine)
- **Reservoir** (domestic, wild) ?
- South America, Africa, Asia
- Sporadic outsiders
- France 1981, Italy 1993, Greece 1996, 2000
- Very high **contagiosity**, respiratory route

NON DOMESTIC SPECIES

- Zoological gardens
- European wildlife
- **African wildlife : African buffalo**
- All known outbreaks in wildlife linked to domestic herds (except Southern Africa)
- Often old descriptions (without virology)
- Hard discussion in 2001

TRANSMISSION ROUTES

- Mainly **contact** (sick/healthy)
- All fluides virulent
- Saliva, milk, blood, semen
- Respiratory route (**mainly swine**)
- Mechanical contact (tool, people, horse,)
- Clothes, vehicle
- Meat, processed products (cheeses,...)

SURVIVAL CAPACITY

- Real and important but not **unlimited**
- Pasteurization
- **Ph >10 et <6** (lactic maturation of meat)
- Disinfection by caustic soda and lime
- **Dryness** (sun, RH<60%)
- Seasons : Winter/Summer, Dry/Rainy
- Means # exceptions



BEFORE 1992

- European scheme
- **Annual vaccination of cattle**
- Inactivated trivalent vaccine (A, O, C)
- **Slaughter and destruction** of all sensitive animals in any outbreak
- **Control of movements**, control at the borders, ring vaccination

OUTBREAKS REMINDERS 1

- 20 to 50 « accidents » every year (not FMD)
- **1970-1971** : 12 outbreaks, **1973** : 1 outbreak
 - **1974** : Pyrénées Orientales : 1 outbreak (C)
 - **1974** epizootic : 89 outbreaks, C virus Brittany-Normandy (22, 35, 56) + 26, 53 4140 ct, 24745 pg, 677 sh, 1 gt
 - **Bouches-du-Rhône**, April **1978**, C virus

OUTBREAKS REMINDERS 2

1979 : Calvados-Manche, March-April, (O1)
23 outbreaks (1928 ct, 761 pg, 84 sh/gt)

1981

- **Pyrénées Atlantiques**, Jan 1981, C1 virus
4 outbreaks (681 ct, 567 pg, 311 sh/gt)
- **Côtes d'Armor**, March 1981, O1 virus
14 outbreaks (601 ct, 8875 pg, 419 sh/gt)

EUROPEAN APPROACH

- Will to eradicate the disease and the virus
- From 1961 to 1991 : success
- From epizootics to sporadic cases
- **Common market in 1993**
- Objectives of medicine (human or animal) are not to vaccinate everybody, against everything, forever

1991/1992

- Low difference on the risk of a primary outbreak (1/2)
- Difference for **extension of outbreaks**
- Global evolution of context
- Control of international trade ?
- **Contradiction between international trade and sanitary security ?**

COMPARAISON IN FRANCE ?

- **1981**
Vaccination of cattle : 14 + 4 outbreaks
- **2001**
Vaccination ban : 2 outbreaks
- **Evolution of farming, economics, and trades**
- Different importance of different species

VACCINATION

- **No vaccine is without any risk**
One risk facing an other one
The two risks change, but not always in the same time or in the same way
- Individual risk/collective risk
- **Pourcentage of sensitive animals vaccinated in 1991 ?**

VACCIN

- Antigenical composition : to be adapted to local strains
- **When the disease is not present, which strains to use ?**
- Vaccine technology changes
- **Serology ?** Experience before 1992 linked to live animal exportation. Excellent **sensibility**. **Specificity ?** NSP

GLOBAL APPROACH

- Vaccination within a global approach, not individual
- First tries of vaccination within the **1950s** : **voluntary participation** : low efficiency at the country level
- Not possible to imagine an « à la carte » vaccination scheme

AFTER 1992

- Cattle (and other species) vaccination ban
- Epidemiological, economical, sanitary and political motivations
- **Reinforcement of vigilance**
- Training, information, alarms
- **Contingency plan in every « département » and a national plan**

OPERATIONAL VIGILANCE

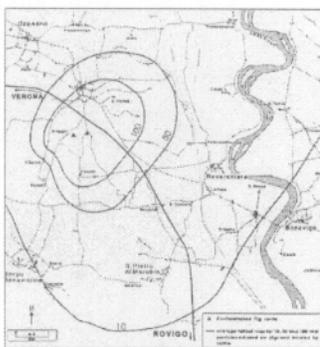
- **Early clinical alarms essential**
- Emergency cases given to veterinarians
- Departmental plan (DSV, Préfet)
- **Laboratory** (AFSSA Lyon and Alfort) : epidemiology and virological diagnosis
- **Epidemiological** network (OIE, EU, FAO)
- Viral airborne dispersion model

SEROLOGY

- Survey in 1997 (cattle), **sheep**
- **4,6% positive serologies with** standard method (OIE sero-neutralisation)
- Surveys in Greece in 1994 and 1996
- **Sero-surveillance in 2001**
- New methods ? New cut-off levels ?
- Vaccine antibodies / wild Antibodies

MODEL

- Respiratory transmission essential
- 10^5 viral particles /24h/cattle
- 10^8 viral particles /24h/pig
- Virus sensitive to relative dryness of air
- Movements of air give the information for the movement of airborne viral particles
- Decision making tool



2001 EPIZOOTIC

- Transmission mainly through **contacts**
- Low respiratory excretion (100 times less than previous figures)
- **Legal and illegal** movements of beef
- **Heat (?)** treatments of pig swills
- **Legal and illegal** movements of sheep
- Tools and reglementation exist : to be used

FRANCE 2001

Mayenne

- British sheep arrival : 16 February, slaughtered : 26 February, disinfection : 06 March, outbreak on cattle : **12 mars**

Seine-et-Marne

- Transportation of sheep from Mayenne to Seine-et-Marne, **known : 23 mars**

LOOPHOLES ?

- Importation of contaminated beef from Asia
- **Controls ?**
- **Swills** not (not enough) treated by heat and not (**not enough**) controled
- FMD **3 weeks** in a farm without any reaction, call....
- Time between suspicion and slaughtering too long (5 days)

CONCLUSION

- Real preoccupation of veterinary services of European countries
- **Sensibilisation** to reinforce, from farmers to veterinarians,....
- Major **economical importance**
- Economical and sanitary importance may vary following parts of the world and time