CURRENT EPIZOOTICAL STATUS OF VOJVODINA PROVINCE FOR AUJESZKY'S DISEASE

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Summary

The epizootical data concerning Aujeszky's disease (AD) in the Province of Vojvodina for the last ten years are summarized for the first time. In order to estimate AD status we used the data from: Epizootiological Reports of the Ministry of Agriculture, Forestry and Water Management, Statistical Year Book of Serbia and a questionnaire that was sent to farm owners, practicing veterinarians, veterinary inspectors and regional epizootiologists. The swine population in Province Vojvodina was estimated 1.246.000 animals. The majority of pig holdings (about 70%) are farrowing and finishing farms. In regard to farm structure, about 30% of swine production is carried out on large industrial farms (more than 100 sows) and 70 % belongs to small farms and backyard stocks. During the past ten years infection was diagnosed in seven different animal species: swine, dog, cat, cattle, sheep, donkey and badger. In the same period the ADV infection was detected on eight large swine farms of industrial type, out of which six were involved in vaccination program. There is no special decree issued by the Veterinary Authorities that regulate AD control neither does national or regional eradication program exist. On some industrial farms control is based on the surveillance and voluntary use of locally developed live attenuated non g-E deleted vaccines. The average ADV seroprevalence of unvaccinated breeding pigs was estimated at 32.8%. The swine population in Vojvodina region is enzootically infected with ADV. Occasionally infection was diagnosed in different domestic and wild life mammals. Vaccination with live attenuated non g-E deleted vaccines precludes the serodiagnosis of infected pigs, thus making eradication of the disease impossible.

Key words: Aujeszky's disease, pigs, seroprevalence, Vojvodina, epizootical status,

Aujeszky's disease (AD), a serious and highly contagious infection of pigs is caused by alphaherpesvirus, Aujeszky's disease virus (ADV) also designated as *Suid Herpesvirus I* (Gerdts et al., 1999). Pig is the only natural host for ADV, which accounts for its ability to be subclinically and latently infected (Kluge et al., 1999). Infection of swine herds with ADV can result in substantial costs to pork producers due to increased risks of abortion and pre-weaning mortality, and reduced rates in growing and finishing pigs (Cooke Linda, 1992). Other common farm animals that the virus infects are cattle, sheep, dogs, cats and on the rare occasion horses (Kluge et al., 1999). Several countries that have successfully eradicated the disease by implementing the recommended measures declared AD free status,

while others are still in the process of eradication (Panseart and Morrison, 2000). In some Eastern European countries AD eradication is carried out in the framework of the nation-wide eradication program, while in the others the main goal is to reduce economic losses caused by AD (Medveczky et al., 2000). The objective of this paper was to summarise the epizootiological data concerning AD in Vojvodina Province and to estimate ADV seroprevalence of unvaccinated breeding pigs on backyard farms.

Materials and methods

The data for this research were taken from: Epizootiological Reports of Ministry of Agriculture, Forestry and Water Management, Statistical Year Book of Serbia. Also, historical, clinical and epizootiological data were obtained through questionnaire that was sent to farm owners, practicing veterinarians, veterinary inspectors and regional epizootiologists. Three main topics appeared in the questionnaire: 1) structure of a farm, 2) vaccination status and 3) clinical outbreaks in the past ten years.

In order to estimate ADV seroprevalence of unvaccinated breeding pigs a total of 354 blood samples were collected from sows and boars belonging to individual producers in all three regions of Vojvodina (Banat, Srem and Backa). Detection of antibodies against AD was carried out by enzyme immunoassay (ELISA). Commercial Aujeszky's Disease Virus Antibody Test Kits (BOMMELI, SWITZERLAND) were used.

Results and discussions

In the year 2006 total pig population in the Province of Vojvodina was estimated at 1.246.000 animals. The majority of pig holdings (about 70%) were farrowing and finishing farms. In regard to farm structure, about 30% of swine production was carried out on large industrial farms (more than 100 sows), and 70 % belonged to small farms and backyard stocks.

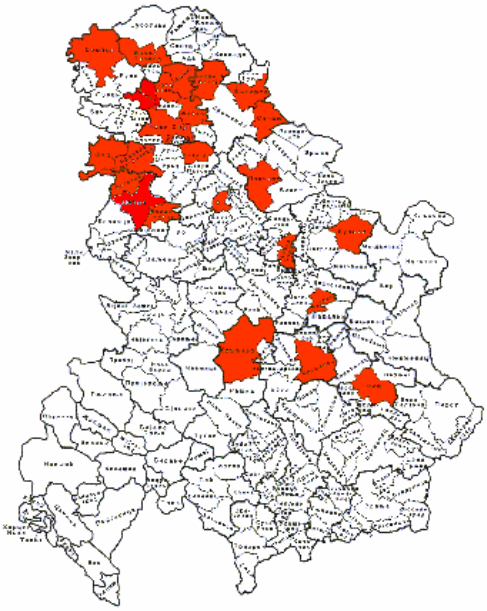
Aujeszky's disease belongs to the notifiable disease in Serbia. The number of the cases occurring per year is reported to O.I.E. There is no special decree issued by the Veterinary Authorities that regulate AD control neither does national or regional eradication program exist. On some industrial farms control is based on the surveillance and voluntary use of locally developed live attenuated vaccines HYOVET and LIOLAVIR (bivalent vaccine against classical swine fever and AD). The virus strain used in this non g-E deleted vaccines is Ercegovac field strain isolated in 1956, and attenuated through 200 passages on chicken fibroblast tissue culture. Vaccination programs are usually adapted according to the epizootical status of the individual farms. The main goal of this vaccination programs is to reduce economic loses caused by clinical episodes of AD. However, vaccination for clinical purposes has not been successful in preventing the spread of the virus under field conditions (Leontides et al., 1994). To prevent losses due to

clinical illness, vaccination against Aujeszky's disease on an individual herd level is widely practiced (Stegeman et al., 1995). Pigs from small farms (with a few exceptions) and backyard stocks are not vaccinated.

After the World War Two, the outbreaks of the Aujeszky's disease were quite rare in Vojvodina, and there was minimal evidence of the disease occurrence in the field. This favourable epizootical status was achieved by implementation of strict control and eradication measures (Djuričić et al., 2003). Unfortunately, during the last decade of the previous century AD was more often diagnosed. The epizootical investigation reveled that during the period 1992-2007 the outbreaks of AD emerged on 23 municipalities, out of which 10 were situated in Central Serbia (43%) and 13 in Vojvodina (57%). The largest number of diagnosed cases appeared in the municipalities of Central Backa region, in which the most dense pig population was situated (Cartogram 1). A higher density of pigs increases ADV transmission owing to more frequent contacts between the pigs (Bouma et al., 1993). The virus, however, may also be introduced by area spread, which includes: interherd movement of other animal species, people, vehicles, several materials and air (Kluge et al., 1992).

Cartogram 1.

AD outbreaks in Serbia in period 1997-2006



Some of the reasons for worsening of epizootically situation were: decreased slaughter control of latently infected pigs, inappropriate disposal of pig

offal and dead pigs that succumbed the disease. Also, for spreading the infection of significant importance were displacement of latently infected breeding sows and boars from large farms to individual producers and quitting of vaccination on some of the large farms in the region with the high density pig population. During the past ten years infection was diagnosed in seven different animal species: pigs, dogs, cats, cattle, sheep, and one donkey and badger. In the same period the ADV infection was detected on eight large swine farms of industrial type, out of which six were involved in vaccination program with live attenuated vaccines against AD. Vaccination failure on these farms was probably due to by irregular vaccination of the sows and lack of boosters for piglets and gilts. On farm No. 1 two outbreaks occurred, the first in 1997 and second in 2000, and on the farm No. 2 there were three outbreaks. The first took place in 1999, and the other two during the year 2000 (table 1).

Table 1

Municipalities in Vojvodina with AD outbreaks and animal species affected

Year	Municipality	Husbandry	Animal species
1997	Novi Sad	farm 1	s
1998	Srbobran	farm	s
	Šid	farm	s
1999	Inđija	farm	s
	Vrbas	farm	s
	Novi Sad	farm 2	s
	Novi Sad	individual	d
2000	N. Beograd	farm	s
	Novi Sad	farm 1	s
2001	Bečej	farm	s
	Vrbas	hunting-ground	ba
2002	Novi Sad	farm 2	s
	Novi Sad	farm 2	s
	Žitište	individual	s, d, c, b, sh
	Sečanj	farm	s
	Pančevo	individual	d
	Novi Bečej	individual	s, d, c, b, do
	S.Mitrovica	individual	s, b, sh, d, c
2003	Novi Sad	individual	c
	Novi Sad	individual	c
	Novi Sad	individual	c
	Novi Sad	individual	c
2005	Sombor	individual	d
	Bečej	individual	d
	Žabalj	individual	s
	Bečej	individual	c
2007	Sr.Mitrovica	individual	d, s

Legend: s-swine, d-dog, b-bovine, c-cat, sh-sheep, do-donkey, ba-badger

The observation that clinical Aujeszky's disease was diagnosed in only eight out of the all investigated herds during the past ten years indicates that infections were subclinical in most of the herds. Apparently, vaccination usually induces sufficient clinical protection, but does not minimize the spread of ADV (Stegeman et al., 1995). The infection is contracted by the carnivors most often through the ingestion of raw meat, offal and bones of pigs that succumbed the disease or were latently infected (Pušić et al., 2006).

The results of examinations of blood sera collected from 354 unvaccinated breeding pigs held by small farmers are summarized in Table 2.

Table 2

The number of seropositive unvaccinated breeding pigs on backyard farms

municipality	No of settlement	No of husbandries	No of animals	No of seropos.	% of seropos.
Žitište	**5**	**10**	**14**	**2**	**14,3**
Zrenjanin	**17**	**71**	**141**	**35**	**24,8**
Kikinda	**8**	**30**	**48**	**23**	**47,9**
N.Kneževac	**2**	**6**	**7**	**0**	**0**
Nova Crnja	**2**	**4**	**5**	**0**	**0**
Novi Bečej	**2**	**23**	**36**	**13**	**36,1**
Čoka	**3**	**7**	**13**	**2**	**15,4**
Bečej	**1**	**21**	**53**	**25**	**47,2**
Vrbas	**2**	**4**	**14**	**6**	**42,8**
Sr.Mitrovica	**1**	**2**	**11**	**5**	**45,4**
St.Pazova	**1**	**3**	**12**	**5**	**41,7**
total	**44**	**181**	**354**	**116**	**32,8**

The estimated seroprevalence ranged between 0% (probably due to small sample size) in two municipalities to 47,9 in municipalities with the highest density pig population. Pig density in the municipality is associated with the within herd seroprevalence suggesting higher seroprevalence in the regions with dense pig population (Stegeman et al., 1995). Before launching national eradication campaigns seroprevalence for AD in some European countries and regions ranged from estimated overall 35% in Belgium (Boelaert et al., 1999) to 69% in South Netherlands (Stegeman et al., 1997). Relatively high percentage of seropositive breeding pigs and small number of clinical episodes of the disease per year suggests that the infection is mostly caused by mildly virulent ADV strains or that the vaccinal virus circulates through the pig population. According to Stegeman et al. (1995), infection by mildly virulent ADV strains may pass unnoticed. Unvaccinated, but seropositive breeding pigs, are either naturally infected with field ADV strains, or purchased on the farms that vaccinate or were vaccinating pigs with live attenuated vaccines against ADV. The other reason for seropositivity of

the unvaccinated pig population is mating upon visit with traveling boars (purchased on the farms that vaccinate or have natural infection) or by insemination with semen of latently infected or vaccinated boars from the same farms.

Conclusions

The swine population in Vojvodina region is enzootically infected with ADV. Individually vaccinated herds are surrounded by non-vaccinated or poorly vaccinated herds and backyard stocks. Such surrounding herds create pockets of susceptibility which can serve as reservoirs of ADV. Occasionally infection was diagnosed in different domestic and wild life species, but the source of infection for those species was almost in all cases pigs. Voluntary vaccination with live attenuated non g-E deleted vaccines precludes the serodiagnosis of infected pigs, thus making eradication efforts impossible. As Aujeszky's disease became discriminatory factor at the international pig market, it is important to establish regulations regarding disease control and a national or regional Aujeszky's disease eradication program.

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