Teschen disease (*Teschovirus encephalomyelitis*) eradication in Czechoslovakia: a historical report

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ABSTRACT: Teschen disease (previously also known as Klobouk's disease), actually called *Teschovirus encephalomyelitis*, is a virulent fatal viral disease of swine, characterized by severe neurological disorders of encephalomyelitis. It was initially discovered in the Teschen district of North-Eastern Moravia. During the 1940s and 1950s it caused serious losses to the pig production industry in Europe. The most critical situation at that time, however, was in the former Czechoslovakia. A nationally organized eradication programme started in 1952. That year the reported number of new cases of Teschen disease reached 137 396, i.e., an incidence rate of 2 794 per 100 000 pigs, in 14 801 villages with 65 597 affected farms, i.e., 4.43 affected farms per village and 2.10 diseased pigs per affected farm. The average territorial density of new cases was 1.07 per km^2. For etiological diagnosis histological investigation of the central nervous system, isolation of virus and seroneutralization were used. Preventive measures consisted in feeding pigs with sterilized waste food and in ring vaccination. Eradication measures took the form of the timely detection and reporting of new cases, isolating outbreak areas, and the slaughter of intrafocal pigs followed by sanitation measures. Diseased pigs were usually destroyed in rendering facilities. The carcasses of other intrafocal pigs were treated as conditionally comestible, i.e., only after sterilization. During the years 1952–1965 from a reported 537 480 specifically diseased pigs 36 558 died; i.e., Teschen disease mortality rate was 6.80% while other intrafocal pigs (88.12%) were urgently slaughtered. During the whole eradication programme there were a reported 542 971 Teschen disease cases. The disease was found mainly in small private farms where domestic refuse was used for pig feeding without proper sterilization. During 1959–1972 there were a reported 16 981 529 vaccinations using a vaccine of national origin. The ratio of vaccination to national pig population was reduced from 0.4904 in 1959 to 0.0786 in 1972. During 1959–1965 the ratio of reported vaccinations to reported new diseased pigs was 521 : 1 and during 1960–1965 the ratio of reported vaccinations to reported intrafocal pigs was 85 : 1. After eradication the vaccination was stopped. The last cases were detected in 1973 and from that time Czech and Slovak territories have been free from this dangerous infection.

Keywords: Klobouk's disease; Talfan disease; porcine enterovirus encephalomyelitis; encephalomyelitis enzootica suum non purulenta; pig infection; pig vaccination; animal infection control

Teschen disease, actually called *Teschovirus encephalomyelitis* (previously also known as Klobouk's disease, virus encephalomyelitis of swine, porcine enterovirus encephalomyelitis – PTV or porcine teschovirus infection) is a particularly virulent and highly fatal viral disease of swine, characterized by severe neurological disorders of encephalomyelitis and causes major economic losses. It is caused by strains of porcine teschovirus serotype 1 (PTV-1) of the genus *Teschovirus*, family *Picornaviridae*. The disease was named after the Teschen district in Czechoslovakia, where it was first reported in 1929. During the 1940s and 1950s it caused serious losses to the pig breeding industry in Europe and also spread to other continents. According to international data on Teschen disease occurrence

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from that time, the most critical situation was in the former Czechoslovakia. The disease was identified for the first time by Professor MVDr. Antonin Klobouk as a virosis initially called *"encephalomyelitis enzootica suum non purulenta"* (Klobouk, 1931a,b, 1933, 1935a,b, 1936). After the Second World War this infection, called also "Klobouk's disease", became internationally notifiable among the most dangerous diseases and was listed among Czechoslovak national priority diseases to be eradicated. This was achieved with the elimination of the last case in 1973. The eradication of Teschen disease was a must for facilitating normal pig breeding, production of pork and export of live pigs and their products. More information is available in Historical Sources, listed in References.

Transmission of Teschen disease takes place between infected and susceptible pigs through both direct and indirect contact. The infective dose is very small, which is why these viruses are so easily transmitted. Infection occurs by the oral or intranasal route and the virus is present in faeces and oral secretions. A frequent source of infection is insufficiently cooked contaminated garbage (swill) fed to pigs. Long distance spread is facilitated by national and international trade, mainly through swine carcasses contaminated in abattoirs by the brain or spinal cord liquid of infected pigs slaughtered during incubation periods when they appeared clinically healthy. There is no specific treatment for Teschen disease. Infection with less virulent PTV strains may result in mild disease, formerly called Talfan disease or benign enzootic paresis of swine or infectious poliomyelitis suum.

Teschovirus encephalomyelitis still affects swine herds in Haiti. The FAO recommends that countries of Central America and the Caribbean region should be aware of the situation in Haiti and apply basic preventive measures to avoid the entry of this virus into their swine population and its potential dissemination (Domenech, 2009). *Enterovirus encephamomyelitis* in pigs caused by porcine Teschovirus has been described in Japan (Yamada et al., 2004). Feng et al. (2007) have isolated and identified the porcine Teschovirus in China and Prodelalova et al. (2009) in the Czech Republic. Antibodies against porcine Teschovirus have been detected in Lithuania (Sereika et al., 2007). The structure of porcine Teschovirus, namely the internal ribosome entry site element, has been the subject of study of late (Hellen and de Breyne, 2007; Bakhshesh et al., 2008; Belsham et al., 2008, 2009) and RT-PCR methods for identification have been developed (Jimenez-Clavero et al., 2003; La Rosa et al., 2006; Kaku et al., 2007). The presence of porcine Teschovirus antigen has been demonstrated by immunochemical methods in the nerve cells of the brain stem and in the spinal cord and ganglion cells of the spinal ganglion from infected pigs (Yamada et al., 2007). The distribution of porcine Teschovirus antigens was consistent with lesions characteristic of nonsuppurative encephalomyelitis (Yamada et al., 2008). Sequencing of field isolates collected from animals presenting with neurological disorders, prove that serotypes other than porcine Teschovirus-1 may also cause polioencephalomyelitis of swine (Zell et al., 2001). Twenty seven strains of porcine enteroviruses, isolated over the period from 1960 to 1980 and deposited in the Collection of Animal Pathogenic Microorganisms (CAPM, Brno, Czech Republic), were reclassified using an RT-PCR protocol that allows detection of the genus *Teschovirus* and the porcine Teschovirus serotype 1 (PTV-1). Two PCR amplifications with cDNA were performed for detection of the genus *Teschovirus* and PTV-1. Amplification of fragments characteristic for the genus *Teschovirus* was successful for all tested viral strains. The characteristic PTV-1 fragment was detected in all save three strains (Prodelalova et al., 2009).

The presence of teschoviruses in water points to contamination with pig faecal residues. A real-time reverse transcriptase PCR method is able to detect 92 fg of porcine Teschovirus RNA per ml of sample. Faeces from other animal species (cattle, sheep, and goats) were shown to be negative in this highly specific test for the assessment of water contamination of porcine origin (Jimenez-Clavero et al., 2003). It is also significant that a high resistance of porcine Teschovirus to chemical inactivation has been demonstrated (Dvorakova et al., 2008).

MATERIAL AND METHODS

Available sources of data for this paper consist mainly of selected national literature on Teschen disease, official statistical data as reported to the State Veterinary Service in Prague, directives of the Ministry of Agriculture and of the Chief Veterinary Officer, and the personal notes of the author (former assistant to Prof. Klobouk) taken between 1958–1978 and who as the Chief Epizootiologist of the Czechoslovak and Czech State Veterinary

Service was professionally responsible for Teschen disease eradication strategy, management and results. Unfortunately, not all the historical data for complete time series of selected epizootiological indicators were available to the author.

The first step in the nationally organized eradication programme against Teschen disease was instituted by directives of the Ministry of Agriculture in 1951 when this disease became obligatorily notifiable and particular duties for local and district authorities as well as for animal health officers were established. These instructions were updated in 1962. Local authorities, in cases of Teschen disease occurrence or when its occurrence was suspected, were responsible for applying an immediate quarantine (isolating the farm and marking it by warning boards), isolation of diseased and suspected animals and prohibiting the transfer of pigs within, from, and into the outbreak area. Diseased pigs were to be reported immediately to veterinary authorities. In order to curb disease spread dead diseased pigs were usually destroyed in rendering facilities. Other intrafocal pigs (i.e., contacts) were quickly slaughtered at the nearest sanitary abattoir, their carcasses stamped with a special mark (a crossing double circle form) and the meat obligatorily sterilized before use. Cerebrum and spinal cord were confiscated. Intrafocal areas as well as sanitary abattoirs and corresponding wastewater were disinfected under the supervision of the responsible public service veterinarian, with 2–3% solution of chloramine, 5% solution of chloride of lime or 2% solution of caustic soda. The observation period was established to be of 28 days and was followed by a final disinfection. Farms could not be restocked until proper cleaning and disinfection was completed.

Etiological diagnosis was supported by veterinary laboratory examinations consisting of histological investigation of the central nervous system, isolation of virus from suspensions of brain and spinal cord in porcine kidney tissue cell lines and discovery of seroneutralization antibodies. Epizootiological investigations tracing the source of infection and the possible spread were in all cases carried out.

An important form of specific prevention consisted in the application of sanitary measures on pig farms minimizing the risk of virus entry. These measures included preventing pigs from roaming freely and the thorough cooking of any waste food before it could be safely fed to swine, thus avoiding feeding with insufficiently cooked refuse (containing pig carcass offal). However, the best scenario was not to use such refuse at all for pig feeding purposes. Control zones were set up to minimize pig movement and to avoid the transfer of pigs to other territories for further breeding.

Surveillance was intensified throughout at risk territories. An important form of surveillance in affected and protection zones was obligatory veterinary inspections of all pigs which were slaughtered on the spot ("domestic slaughter" outside of the abattoirs), i.e., also at the farms not under anti-Teschen disease quarantine.

In 1952 the production of a vaccine commenced at Bioveta Opava, Czech Republic, which was specialized for Teschen vaccine production. They first used virus inactivated by formaldehyde adsorbed onto aluminium hydroxide and later inactivated vaccine was produced from virus propagated on tissue cultures from porcine kidney. The first director was MVDr. Karel Kostansky who was in place until 1956 and then MVDr. Vojtech Madr, CSc. was in charge until 1973, i.e., the year in which the disease was eradicated nationwide. Bioveta Nitra, Slovak Republic, also produced anti-Teschen disease vaccine (under the supervision of Doc.MVDr Alojz Zuffa, CSc.) which was used in the Slovak Republic and which complemented Bioveta Opava, Czech Republic, vaccines.

The programme against this infection was included in the national multi-infection control and eradication strategy. Therefore, general principles of specific prevention, control and eradication were applied similarly as against other selected infectious diseases as described in www.cbox.cz/vaclavkouba/eradication.htm. These principles include, ensuring relevant legislation and instructions; planning based on defining objectives, measures and activities as well as personal responsibilities; applying anti-epizootic flexible methodology based on the latest research and field experience; carrying out active specific surveillance, a monitoring and information system; adjusting the anti-epizootic organization and management of animal health services; securing the necessary professional manpower including specific disease-oriented education and training; full involvement of provincial and district epizootiologists; ensuring the necessary support of research, extension programmes, financial funds and cooperation with relevant organizations; applying strict import conditions and measures for anti-epizootic protection of the country territory etc. The intensity of the programme was adjusted

not only to changing disease incidence but also to its territorial distribution and trends. All specific anti-Teschen disease activities carried out by the public veterinary service were free of charge to animal owners.

The results of eradication measures are expressed, where possible, in the form of selected epizootiological indicators such as incidence rate, mortality rate and intrafocal morbidity.

RESULTS

On the territory of Czechoslovakia (127 903 km^2) during the Teschen disease national eradication programmes there were on average 5 773 000 pigs with the minimum in 1953 of 4 174 000 and maximum in 1973 of 6 266 000. More information is presented in Table 1. In 1952, when the eradication programme was started there was a reported number of 137 396 new cases of Teschen disease (incidence), i.e., the value of incidence rate per 100 000 pigs reached 2 794. The average territorial density of new cases was at that time 1.07 per km^2; however, the space distribution was very irregular. At the beginning of the 1950s Teschen disease was reported from all the districts of the country but there were two major affected territories: North-Eastern Moravia (Teschen territories) and Central Slovakia.

Table 1. Pig population in Czechoslovakia, Czech Republic and Slovak Republic during 1952–1973

Year	Czech Republic	Slovak Republic	Czechoslovakia
1952	3 188 000	1 730 000	4 918 000
1953	2 727 000	1 447 000	4 174 000
1954	3 033 000	1 738 000	4 771 000
1955	3 397 000	1 888 000	5 285 000
1956	3 410 000	1 959 000	5 369 000
1957	3 329 000	2 106 000	5 435 000
1958	3 198 000	2 085 000	5 283 000
1959	3 499 000	2 188 000	5 687 000
1960	3 553 000	2 409 000	5 962 000
1961	3 654 000	2 241 000	5 895 000
1962	3 661 000	2 236 000	5 897 000
1964	3 859 000	2 180 000	6 139 000
1965	3 494 000	2 050 000	5 544 000
1966	3 348 000	1 957 000	5 305 000
1967	3 541 000	2 060 000	5 601 000
1968	3 233 000	1 903 000	5 136 000
1969	3 169 000	1 868 000	5 037 ,000
1970	3 423 000	2 107 000	5 530 000
1971	3 742 000	2 193 000	5 935 000
1972	3 940 000	2 153 000	6 093 000
1973	4 068 000	2 198 000	6 266 000

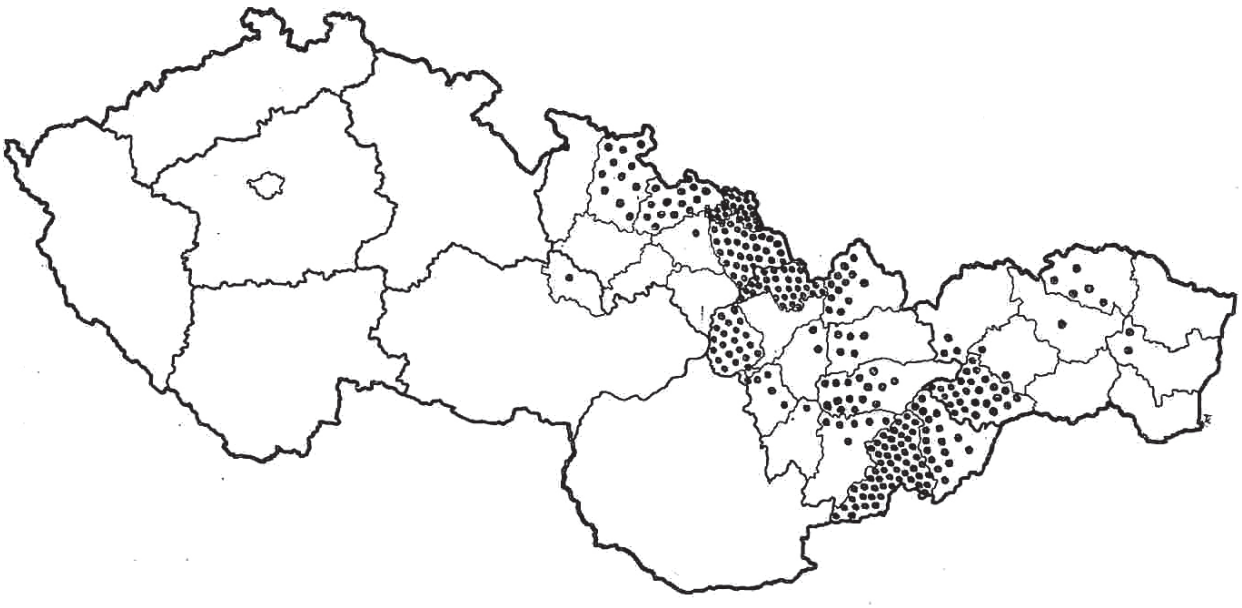

Figure 1. Map of Teschen disease distribution in Czechoslovakia, 1966

Thanks to preventive/control measures and the development of pig breeding/production concentration and specialization the number of affected districts was reduced in 1961 to 71 districts, i.e., 68.25%. The most affected districts were Cadca, Dolni Kubin, Frydek-Mistek and Karvina following by Rimavska Sobota, Lucenec, Zvolen, Ziar nad Hronom and Banska Bystrica. Highly affected islets were reported in the Pisek and Humenné districts. Territories that were Teschen disease-free at that time included North-Western Bohemia, a belt of districts from Blansko to Trnava and the districts of Kosice province. In other territories infection was reported only as exceptional cases.

During the following five years infection was reduced to 20 districts, i.e., 20.70% and all districts in Bohemia reported zero occurrence. In Northern Moravia the highest occurrence continued to be in the Frydek-Mistek and Karvina districts. One case was reported in the Prostejov district of Southern Moravia. The relative highest occurrence was reported in Central Slovakia, mainly in the Lucenec and Cadca districts, followed by the Rimavska Sobota, Dolni Kubin, Povazska Bystrica and Banska Bystrica districts, while in the others there were reported only sporadic cases. In Eastern Slovakia the most affected was the Roznava district. More data can be seen in Figure 1.

During the period 1952–1965 from the reported 537 480 new cases of Teschen disease 36 558 pigs died (6.80% specific mortality rate) and 473 625 pigs were sanitarily slaughtered (88.12%). More information can be gleaned from Table 2. During 1960–1963 there were a reported 970 confiscated non comestible pig carcasses (0.29% from all confiscated pigs). During this period 30 871 pigs were reported as conditionally comestible due to Teschen disease (2.73% from all conditionally comestible slaughtered pigs).

The total number of reported affected villages during 1952–1973, i.e., over the course of 22 years, was 74 005, i.e., on average 3 364 per year (maximum in 1952 – 14 801, minimum in 1973 – 4). During 1952–1965 72 550 affected villages with 252 844 affected pig farms were reported, i.e., on average 3.49 outbreaks per one affected village. In these affected farms there were reported 537 246 specifically diseased animals, i.e., on average 2.12 diseased pigs per farm. More data is presented in Table 3.

The period 1960–1965 represents an example of intrafocal morbidity and there were a reported 108 934 intrafocal pigs with 15 859 new diseased ones, i.e., 14 56% specific intrafocal morbidity. In that period 7 577 affected farms were reported, i.e., on average 3.09 specifically diseased animals. This indicated that Teschen disease was found mainly on small private farms where domestic refuse was used for pig feeding often without proper sterilization. This indicator also reflected the speed of outbreak discovery and of the application of eradication measures to prevent further intrafocal spreading. Table 4 provides more information.

Table 2. Teschen disease – reported newly diseased, dead and sanitarily slaughtered pigs (Czechoslovakia, 1952–1965)

Year	Diseased	Dead	Sanitary slaughtered
1952	137 396	8 486	115 931
1953	126 583	13 796	111 021
1954	65 664	2 492	61 644
1955	69 407	4 050	56 258
1956	58 349	1 767	56 154
1957	35 963	1 207	34 651
1958	20 754	1 249	19 139
1959	7 271	1 207	6 563
1960	6 446	928	5 003
1961	3 168	724	2 444
1962	2 173	436	1 699
1963	790	194	584
1964	1 455	305	1 104
1965	1 827	336	1 439
Total	537 480	36 558	473 625
%	100.00	6.80	88.12

The gradual reduction in incidence was also reflected in the number of Teschen disease insurance cases financed from insurance agency sources: e.g., from 10 843 in 1954 (16.4% from all insurance cases covering the pig population), to 944 in 1965 (0.3%).

The reported number of specific vaccinations of pigs against Teschen disease during 1959–1972 reached 16 981 529 (in the Czech Republic 3 466 110 and in the Slovak Republic 13 515 419). The ratio of vaccinations:pig population was reduced from 0.4904 in 1959 to 0.0786 in 1972. During the post-eradication period the vaccination programme was gradually reduced to zero. This data is presented in Table 5.

Important indicators consist in the relative size of specific vaccinations to different epizootiologi-

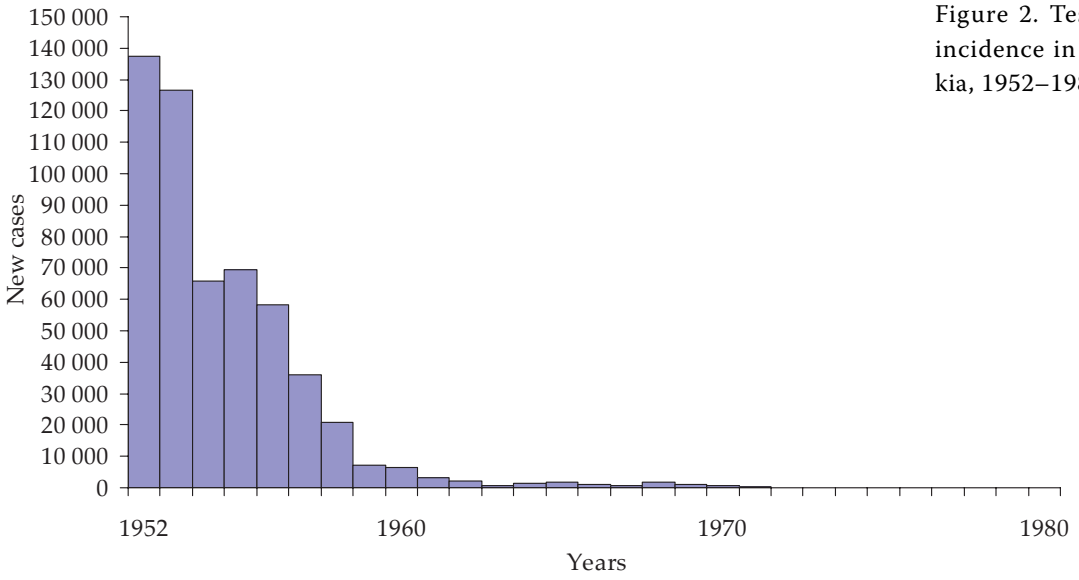

Figure 2. Teschen disease incidence in Czechoslovakia, 1952–1980

Table 3. Teschen disease – reported number of newly affected villages and farms (Czechoslovakia, 1952–1975)

Year	Affected villages			Affected farms	Affected farms per village	Average pigs in affected farm	Average diseased /affected farm
	Czech Republic	Slovak Republic	Czechoslovakia				
1952			14 801	65 597	4.43		2.10
1953			13 243	54 505	4.12		2.32
1954			10 642	29 943	2,81		2.19
1955			9 335	32 870	3.52		2.11
1956			9 085	29 956	3.30		1.95
1957			7 019	18 933	2.70		1.90
1958			4 093	9 935	2.43		2.09
1959			1 639	3 528	2.15		2.06
1960			1 084	2 389	2.20	16.56	2.70
1961	291	254	545	1 350	2.48	17.96	2.35
1962	131	196	327	1 557	4.76	12.80	1.60
1963	28	135	163	469	2.88	18.07	1.69
1964	21	193	214	646	3.02	14.29	2.33
1965	60	300	360	1 166	3.24	9.28	1.57
1966	76	209	285				
1967	41	187	228				
1968	9	275	284				
1969	13	269	282				
1970	3	232	235				
1971	3	105	108				
1972	0	29	29				
1973	0	4	4				
1974	0	0	0				
1975	0	0	0				
			74 005	(252 844)			

Table 4. Teschen disease – reported number of intrafocal pigs and intrafocal morbidity, (Czechoslovakia, 1960–1965)

Year	Number of intrafocal pigs	Per 100 000 pigs	New diseased pigs	Intrafocal morbidity
1960	39 541	663	6 446	16.30
1961	24 277	412	3 168	13.05
1962	17 372	295	2 173	12.50
1963	8 476	145	790	9.32
1964	9 240	151	1 455	15.75
1965	10 028	181	1 827	18.22
Total	108 934	324	15 859	14.56 (average)

cal categories of pig population. For example, during 1959–1965 the ratio of vaccinations to newly diseased pigs reached 521 : 1 (12 058 891/23 130) and the ratio of revaccinations to newly diseased pigs reached 261 : 1 (6 026 482/23 130); during 1960–1965 the ratio of vaccinations to intrafocal pigs reached 85 : 1 (9 270 091/108 934) and the ratio of revaccinations to intrafocal pigs reached 43 : 1 (4 630 450/108 934). In other words, during these periods it was reported that the number of vaccinations was 521 times higher than the number of newly diseased pigs and 85 times higher than the number of intrafocal pigs and that the number of revaccinations was 261 times higher than the number of newly diseased pigs and 43 times higher than the number of intrafocal pigs. This data is summarised in Table 6.

The eradication programme lasted 22 years and brought prevalence to zero at the end of 1973. In that year the last 31 new cases were reported, i.e., the value of incidence rate per 100 000 pigs was reduced to 0.49. During the period 1952–1973 there

Table 5. Teschen disease – reported number of specific vaccinations and ratio vaccinations/pig population (Czechoslovakia, 1959–1972)

Year	Czechoslovakia	Ratio	Czech Republic	Ratio	Slovak Republic	Ratio
1959	2 788 700	0.4904	1 228 895	0.3663	1 559 805	0.7129
1960	2 367 015	0.3970	816 620	0.2298	1 550 395	0.6436
1961	2 090 376	0.3546	528 829	0.1447	1 561 547	0.6969
1962	1 650 320	0.2799	325 182	0.0888	1 325 138	0.5926
1963	1 263 098	0.2161	144 731	0.0394	1 118 367	0.5142
1964	1 030 386	0.1678	42 446	0.0110	987 940	0.4532
1965	868 996	0.1567	33 715	0.0096	835 281	0.4075
1966	920 425	0.1735	52 402	0.0157	868 023	0.4335
1967	828 303	0.1479	71 007	0.0201	757 296	0.3676
1968	809 409	0.1576	72 631	0.0225	736 778	0.3872
1969	646 001	0.1283	46 812	0.0148	599 189	0.3208
1970	599 637	0.1084	17 178	0.0050	582 459	0.2764
1971	640 119	0.1079	27 516	0.0074	612 603	0.2793
1972	478 744	0.0786	58,146	0.0148	420 598	0.1954
Total	16 981 529		3 466 110		13 515 419	
Proportion	100%		20.41%		79.59%	

Table 6. Teschen disease – ratios of reported vaccinations and revaccinations/newly diseased pigs and to the number of intrafocal pigs (Czechoslovakia, 1959–1965)

Year	Ratio vaccinations/		Number of revaccinations	Ratio revaccinations/	
	new diseased	intrafocal pigs		new diseased	intrafocal pigs
1959	384		1 396 032	192	
1960	367	60	1 186 064	184	30
1961	660	86	1 045 440	330	43
1962	759	95	825 740	380	46
1963	1,599	149	623 10	799	74
1964	708	112	515 070	354	56
1965	476	87	434 826	238	43

were reported in Czechoslovakia 542 971 cases, in the Czech Republic 467 765 (86.15%), and in the Slovak Republic 75 206 (13.85%). During the post-eradication period there were no new cases reported. More information can be seen in Table 7 and Figure 2.

DISCUSSION AND CONCLUSION

The main strategy in the programme for the eradication of Teschen disease was based on the slaughter of intrafocal pigs, systematic surveillance and prophylactic vaccination of pigs in affected and surrounding villages (ring vaccination) as well as in other specific risk territories, and due consideration being given to the local epizootiological situation, and livestock and social-economic conditions.

Among those who contributed to Teschen disease eradication in the former Czechoslovakia mention must be made first of all of Prof. MVDr. Antonin Klobouk, DrSc., Head, Buiatric Clinics, University of Veterinary Sciences, Brno, Czechoslovakia. He was the discoverer of this disease aetiology, was the first researcher to isolate the specific causative virus and identified its sources, survival, modes of transmission, immunogenicity (including original vaccine development). He also developed feasible and effective diagnostic, control and eradication methods. A very important research milestone consisted in identifying how the virus spread: firstly by diseased pigs (the presence of virus in faeces and oral secretions) and after their slaughter by meat secondarily contaminated with infected cerebrospinal fluid or cerebrospinal tissues. Among other Teschen disease researchers who significantly influenced the control and eradication programme number MVDr. Vojtech Madr, CSc. (former assistant to Prof. Klobouk), Prof. MUDr. Frantisek Patocka, DrSc., Prof. MUDr. Vaclav Kubelka, DrSc., and Doc. MUDr. Bohumil Korych, CSc. (all three from the Institute of Medical Microbiology, Third Faculty of Medicine, Charles University, Prague) and Doc. MVDr. Alojz Zuffa, CSc.. The veterinary research often exploited the results from poliomyelitis (polio, infantile paralysis) virus studies in which the above-mentioned human medicine specialists used Teschen disease as a model and for comparative analyses due to the biological similarity of the two viruses. Among the veterinarians involved in Teschen disease study and control measures were Prof. MVDr. Jaroslav Drazan, CSc., Prof. MVDr. Ivan Brauner, DrSc., and Prof. MVDr. Harnach, DrSc. as well as the veterinarians Ondrej Doubrava, Leopold Kraus, Antonin Kvapil, Frantisek Niznansky, Antonin Patloka, Vaclav Pokorny, Leopold Trefny, Juraj Ursiny, Norbert Weidlich, Vladimir Zdrazil and Jano Zubaj.

From the beginning (1959) of the global information system and the inception of the FAO/WHO/OIE Animal Health Yearbook Teschen disease was internationally notifiable as Klobouk's disease or Teschen disease (Latin: *Encephalomyelitis enzootica suum*) under the code "Cc". In 1986 the numeric code for specific transmissible diseases was introduced and Teschen disease was identified by the code number A140, i.e., among the most dangerous fatal and incurable diseases included in the sixteen OIE List A diseases. From 1995 Teschen disease was reported as *Enterovirus encephalomyelitis* in swine and recently the name has been changed to *Teschovirus encephalomyelitis*.

Within the global network of FAO reference laboratories, based on professional mission visits and

Table 7. Teschen disease incidence – reported new cases, incidence rate per 100 000 pigs (Czechoslovakia, 1952–1980)

Year	Czech Republic	Incidence rate per 100 000	Slovak Republic	Incidence rate per 100 000	Czechoslovakia	Incidence rate per 100 000
1952	114 281	3 584	23 115	1 336	137 396	2 794
1953	120 622	4 423	5 961	404	126 583	3 033
1954	59 894	1 975	5 770	332	65 664	1 394
1955	61 206	1 802	8 201	434	69 407	1 313
1956	52 396	977	5 953	304	58 349	1 087
1957	32 519	519	3 444	164	35 963	662
1958	16 603	140	4 151	199	20 754	393
1959	4 889	77	2 382	109	7 271	128
1960	2 751	37	3,695	153	6 446	108
1961	1 347	7	1 821	81	3 168	54
1962	255	1.82	1 918	86	2 173	37
1963	67	1.01	723	33	790	13.5
1964	39	20.29	1 416	65	1 455	23.7
1965	709	2.27	1 118	55	1 827	33
1966	76	1.69	901	46	977	18.41
1967	60	0.4	684	33	744	13.3
1968	13	0.66	1 727	91	1 740	33.87
1969	21	0.23	985	53	1 006	19.96
1970	8	0.24	710	54	718	12.98
1971	9	?	393	18	402	6.77
1972	0	0	107	4.96	107	1.75
1973	0	0	31	1.41	31	0.49
1974	0	0	0	0	0	
1975	0	0	0	0	0	
1976	0	0	0	0	0	
1977	0	0	0	0	0	
1978	0	0	0	0	0	
1979	0	0	0	0	0	
1980	0	0	0	0	0	
Total	467 765		75 206		542 971	
%	86.15		13.85		100	

recommendations cleared by respective governments, covering all diseases of the OIE List A, the only reference laboratory for Teschen disease was selected to be the Veterinary Research Institute, Brno, Czechoslovakia. (Directors of the Institute: Doc. MVDr. Evzen Jurak, DrSc., and Prof. MVDr. Karel Hruška, CSc.; Head of Reference Laboratory: MVDr. Vojtech Madr, CSc.). At that time the first class laboratory facilities and research staff of this institute played a major role in this decision. However, also important was the fact that the infection was first discovered in this country; Czechoslovakia had also generated the most results on Teschen disease basic and applied research and had much experience with transferring them into practical effective control and eradication. MVDr. Vojtech Madr, CSc. was also the author of the text dealing with the *Enterovirus encephalomyelitis* (Teschen/Talfan disease) in the global OIE Manual of Standards for Diagnostic Tests and Vaccines (1996). The reference laboratory function first covered the European continent (1984–1986) and later the whole world until 1995 when the OIE reformed the network of international reference laboratories. From that time onwards a Teschen disease international reference laboratory has been miss-

ing. The above mentioned institute was involved in the OIE Project "Eradication of Teschen disease from Madagascar" (in 1997 MVDr. Jan Stepanek was sent by the OIE to this country to evaluate the results of the 1st phase of the project).

The success of the eradication programme was a merit of the specific basic and applied research results of professor Klobouk and his collaborators, of its consequent implementation by the centralized public veterinary service and its professional staff in the field, slaughterhouses, diagnostic laboratories and vaccine production facilities. Of prime importance was a management system which applied a robust strategy and tactics which was grounded in specific legislation and directives as well as in the support of farmers and local authorities.

During the periods of high incidence of the disease in central Europe and Madagascar, active immunoprophylaxis was an important means for the control of this infection. As today outbreaks of *Teschovirus encephalomyelitis* are rare and according to international information sources country-wide eradication programmes are not carried out, the vaccines are currently not being produced.

Infections with low pathogenic porcine Teschoviruses occur in some parts of the world. *Teschovirus encephalomyelitis* has been a rare disease reported during the last years in Belarus, Japan, Latvia, Madagascar, Moldavia, Romania, Russia, Uganda and Ukraine and very recently in Haiti. The experience of the former Czechoslovakia could be useful not only for the mentioned countries.

Successful eradication of Teschen disease, without recurrence, contributed to the development of a national pig breeding/production industry, led to self-sufficiency in pork and facilitated intra-country transfer as well as the export of pigs and their products.

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