RABIES BULLETIN EUROPE - Vol. 2/Nr. 1/1978

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1. INTRODUCTION

Following the recommendations of the 2nd European Conference on the Surveillance and Control of Rabies, Frankfurt 15-19 November, 1977, the coverage of reporting will be extended in 1978 to the remaining countries of Europe not yet included in this collaborative study.

Further, WHO Consultations will be held in April 1978, in order to establish guidelines for the collection of data concerning human rabies and human antirabies treatments. Following these Consultations, the National Health Ministries of European countries will directly be approached to establish future collaboration.

1.1. Contents of the Bulletin.

This issue deals with the rabies situation in the last quarter of 1977. In addition, data for the 3rd quarter are included for the Slovakian Socialist Republic, Rumania, Spain and Luxembourg. We regret that the Luxembourg data had accidentally been omitted from the previous Bulletin through the Centre's fault.

Newly included in this issue are the contributions from Turkey giving a review on the rabies situation (2.21), the rabies case data, and a rabies case map in the Annex.

The following countries did not register rabies cases during the 4th quarter of 1977: Finland, Great Britain, Greece, Netherlands, Norway, Portugal and Sweden.

No reports were obtained from the German Democratic Republic and Yugoslavia.

Under "Miscellaneous" there are two human case histories, one from a further case in Switzerland, and one from Poland.

Ample space is given to the results of the WHO Informal Consultation on Reference Preparations and Potency Tests for Rabies Vaccines held during the recent WHO/IABS Joint Symposium, Marburg, 20-24 November 1977. The results and recommendations of this Consultation are quoted in the full text from the yet unpublished WHO document VPH/77.3. We thought this to be of utmost importance to Public Health authorities, since minimum antigenic values for rabies vaccines are recommended as well as immunization schedules for post-exposure treatment, pre-exposure immunization and post-exposure treatment of previously vaccinated persons. Also included into this report are the proposed International Reference Preparation for rabies vaccines and the potency testing of this product.

1.2. Rabies maps.

Two rabies maps of Europe are added in the Annex. The maps give an account of the rabies situation, separately, for the 3rd and 4th quarter of 1977. The readability of the maps has been approved by enlarging the dots representing individual rabies cases resulting in a somewhat lessened degree of accuracy. For the future, it is intended to add a rabies case map to each issue of the BULLETIN covering the same time period as the case data from the Tables.

In a third map of the Annex, the rabies situation in Turkey is dealth with. A separate map was necessary in order to keep the format of Central Europe large enough.

1.3. Regular reporting schedules.

We have been trying to give the information available to us back to the collaborating countries as soon as possible. This requires, however, that individual countries send their data to the Centre regularly at fixed time intervals. In the past, the majority of countries send their reports and data as requested with few exceptions. In order not delay the issue of the BULLETIN on account of those giving theirs reports in time, we repeat our request to submit the data for the previous quarter not later than by

31 January,

30 April,

31 July, and

31 October of each year.

1.4. Citations from the BULLETIN.

If text or data are to be quoted from the BULLETIN we suggest to use the following writing:

Rab.Bull.Eur.

followed by number and year of the respective issue.

We also want to emphasize that maps are not to be reproduced for publication without the permission of the WHO Coll. Centre for Rabies Surveillance and Research.

2. RABIES SITUATION IN EUROPE

2.1. Rabies in Austria.

No changes worth mentioning occured during the 4th quarter of 1977.

2.2. Rabies in Belgium.
by R. Dépierreux

The second epizootic of sylvatic rabies which occured in January 1974 after an absence of 18 months reaching its epizootical culmination with 465 confirmed cases in 1976, shows a distinct regression.

In 1977 the total number of diagnosed rabies cases dropped to 69 of which 31 were domestic animals - mainly cattle - and 38 wild-living animals (36 foxes and 2 others).

This favorable and encouraging evolution has been observed above all during the 2nd quarter of 1977 with a total of 17 cases.

Taking into regard the observations made during the first epizootic (1966 to 1972) this tendency is supposed to be conformed in 1978 and it seems to be possible that the disease will disappear temporarely.

This situation might be due partly to the maladie in foxes itself partly to the continous application of the control measures published in No. I/1977 of the "RABIES BULLETIN EUROPE".

As we learned from the experience that a period of abating does not mean the definitive eradication of the sylvatic rabies, the legal measures remain in force and a new campaign of gassing of fox dens will be organized in spring of 1978.

2.3. Rabies in Czechoslovakia.

(a) Czech Socialist Republic (CSR)

by Ladislav Polák

A comparison of the total number of rabies cases registered in 1977 and 1976 reveals that the epizootological situation is roughly the same.

Positive findings show clearly the fox to be the main vector of rabies in the CSR.

Foxes participated by 89.4 % in all positive findings. In domestic animals rabies was found in 5.6 %.

The rabies occurance was traceable in every month in the course of the year. The highest incidence of rabies was registered in March (49) and July (53) and the lowest was noted in June (18).

During 1977, rabies has spread from border areas to further four districts in Central Bohemia.

In the territory of the CSR rabies occurs in its silvatic form with an occasional transmission to domestic animals.

(b) Slovakian Socialist Republic (SSR)

No report obtained for the 4th quarter of 1977.

2.4. Rabies in Denmark.

by Erik Stougaard

Having been absent from Denmark since November 1970, rabies has reappeared and was diagnosed anew in a fox on September 12, 1977.

Up to 1st January, 1978 rabies in Denmark has been found only in foxes and all cases have been close to the German-Danish frontier.

September 1977	3 foxes	Padborg/Tinglev
October 1977	1 fox	Padborg
November 1977	1 fox	Padborg
December 1977	1 fox	Kliplev

The vaccinations of all dogs above the age of 3 months within the combat area mentioned in "Rabies Bulletin Europe" 2/77 have been completed.

A total of 24.850 dogs within the area have been vaccinated. A live modified vaccine, ERA strain, was used.

Vaccination is compulsory for all dogs entering the combat area in the future. For all dogs born within the combat area vaccination is compulsory, when the age of 3 months is reached, provided the rabies-situation in the area remains unchanged.

Extinction of foxes and badgers by gas, in the whole combat zone will be initiated from 1st January 1978.

2.5. Rabies in Germany.

(a) Federal Republic of Germany (DEU)

In 1977, a total of 4949 rabies cases were recorded in the Federal Republic of Germany. Compared to previous years (Table) this is the 3rd highest annual figure during the seventies and also during the last 28 years.

Table: Rabies cases DEU between 1969 - 1977

Year:	1969	1970	1971	1972	1973	1974	1975	1976	1977
No. of Cases:	4012	2782	2282	2772	3201	4507	5936	8842	4949

The significant reduction in the total number of cases observed in 1977 seems, however, to indicate that the heavy epidemic starting in 1974 had reached its peak in 1976 and is now steadily decreasing.

During Quarter 4 of 1977 heavy foci of infections were noted in the northern parts of Schleswig-Holstein near the Danish border, in the northern (Karlsruhe) and southwestern (Freiburg) parts of Baden-Wuerttemberg, as well as in some border areas to DDR and CSR.

The eastward-bound epidemic starting in 1974 from France has by now reached the western banks of the Rhine river and may eventually move into southwestern Rheinland-Pfalz.

In 1977, wildlife animals accounted for 88.85 % (4397) and domestic animals for 11.15 % (552) of the recorded cases.

Infected animals most frequently reported, by percentage of the total cases, were the following: foxes (75% = 3713), deer (5.9% = 292), mustelidae (5.3 % = 262), cattle (4.2% = 206), cats (3.3% = 162), dogs (2.1% = 106), other domestic and other wildlife animals (1.5% each).

Most interesting is the fact that cattle for the first time since 1965 take position 4 (so far position 2) in the list of annual species most frequently infected with rabies. This may be the result of enforced vaccinations of cows on pasteur, propagated widely during 1977.

(b) German Democratic Republic (DDR)

No reports obtained for quarter 3 and 4, 1977.

2.6. Finland.

The country continued to remain rabies-free.

2.7. Rabies in France.

by L. Andral

Concerning the course of the rabies epidemic in France in 1977 the following observations should be noted:

1. In the areas previously infected the development of the disease occurred in the traditional manner but at a lesser degree than in 1976.

2. Three new departments became rabies-infected. The disease penetrated in the Department of Ain about 20 to 25 km (89 cases), while it advanced in the two other departments - Val d'Oise (21 cases) and Nièvre (14 cases in foxes only) - only a few kilometres.

3. The number of rabies cases recorded in different animal species declined markedly. The reduction was less significant in wild animals as compared to the total number of investigated samples. This is of importance with regard to domestic animals as it clears up that additional prophylactic measures will not be necessary.

4. The advance of the disease into rabies free regions was -generally seen-little or zero except in the departments Jura and Ain bordering to Switzerland. Here the disease progressed about 40 km southward. Nevertheless, a spreading tendency in eastern direction towards the Rhine-Plain appears- in outlines.

5. No pronounced "Rabies frontwave" exists anywhere in France at present. There are some high density areas separated from each other by apparently rabies free zones. Such areas are as follows:

   Montdidier - Maignelay

   Chantilly - Luzarches

   Chateau Thierry - Soissons - Ville en Tardenois

   Auxerre - Clamecy

6. Furthermore, the following should be noted:

   a) In February 1977 rabies has been confirmed in a three years old fox near Saint-Franchy in the Department of Nièvre more than 45 km from the known outbreak area. This incidence was never followed by a secondary case.

   b) 9 cases of rabies in foxes recorded during the 1st quarter of 1977 near the border between the two departments Saône-et-Loire and Côte d'Or had as a consequence no more than 5 secondary incidences for the rest of the year 1977.

Such stagnancy and regression has not been observed in France since 1968. It would be important to further observe the development of that situation and to find out the exact factors responsible for such a subversion of the epidemiological tendency.

2.8. Rabies in Greece.

No rabies cases were registered during quarter 3 and 4, 1977.

2.9. Great Britain.

The country continued to remaine rabies-free.

2.10. Rabies in Hungary.

No bigger changes occured during the 4th quarter of 1977.

2.11. Rabies in Italy.

by A. Mantovani

Italy has been free from sylvatic rabies until February 1977. In that month, some cases were reported in foxes in the area of Valle Aurina, in the province of Bolzano, bordering with Austria. During 1977 rabies has been diagnosed in 82 foxes, 5 badgers and 12 roe deers, from 10 municipalities, all in the same area. The area involved by rabies in 1977 is about 800 square kilometres. It is not clear whether the disease has crossed the Austrian border only once (then spreading from this unique point) or whether it has crossed the border in different instances. An interesting fact is that it has proved able to cross mountains over 2,800 m above sea level during a period of heavy snow.

Measures concerning foxes and stray dogs and cats control have been enforced. Vaccination of dogs in the provinces along the northern borders of Italy has been made compulsory. Also ruminants using pastures in infected areas are being vaccinated.

A trial for evaluating the density of foxes and other wild carnivores in Italy is in progress.

An international meeting, "Convegno Europeo sulla Rabbia Silvestre", has been held in Bolzano from 26th - 28th October 1977.

2.12. Rabies in Luxembourg.

by Al. Schiltges

In 1977, rabies has hardly decreased. Alone in December, 7 new cases were registered in different parts of the country. During summer and fall the rabies incidences were comparably low (13 cases during June-November) especially in the centre of Luxembourg.

As compared to 1976 the number of rabid animals rose from 31 to 34 in 1977. In 1975, the incidence was 52 cases. The involvement of animal species during 1975-1977 is shown in the Table:

	Cattle	Sheep	Cats	Horses	Dogs	Foxes
1975	12	8	3	-	-	29
1976	8	-	2	1	1	19
1977	3	-	-	-	2	29

As before, the fox is the main transmitter of the disease. Therefore the appropriate reduction of the fox population has to be continued. Besides, it must be assumed that the actual number of rabid foxes is much higher than those diagnosed since not all carcasses of these wild living animals are found and examined.

2.13. Rabies in the Netherlands.
by C. J. Vermeulen

Though in 1975 the positive foxes were still only found in the east along the German frontier, South-Limburg was also confronted with a number of cases as a result of the serious state of infection in the surroundings of Aachen in West-Germany, where since 18th November 1975, 25 cases had been confirmed in foxes and 2 in dogs in a very short time.

In February 1976 we started the compulsory vaccination of dogs. On May 1 more than 1.5 million dogs were vaccinated out of an estimated population of 1.8 million. So we are sure that we have achieved the range of 75-80% immunity in the dog population.
In 1976 there were 32 confirmed rabies cases (31 wildlife animals and 1 sheep).

At the request of the cooperating medical and veterinary authorities in South-Limburg a leashing order came into force on 1st May to keep back the number of stray dogs and cats and to reduce the number of biting incidents of non-traceable dogs.

This year the first case in a fox was confirmed on 25 January 1977 and although there was a second case in a young fox shot dead 500 meters from the Belgian border on 17 July 1977 the obligation to vaccinate dogs was cancelled on 25 July 1977.

A folder about rabies with a recommendation to vaccinate dogs and cats is widely spread over the country.

2.14. Norway.

The country continued to remain rabies-free.

2.15. Rabies in Poland.

No significant changes occured during the second half of 1977.

2.16. Portugal.

The country continued to remain rabies-free.

2.17. Rabies in Rumania.
by M. Movanu

Comparing the rabies data of the second half-year with the situation during the first two quarters of 1977 the following can be stated:

1. Most of the registered rabies cases have been reported from the provinces Transilvania and Moldavia in the northern part of the country.
2. Among the wild carnivores which play an active role in the transmission of the disease the foxes are the most important species.

3. In the group of domestic carnivores the cat has gained in importance with respect to the transmission of rabies about in the same manner as the dog due to the more frequent contact of cats with foxes both species being consumers of rodents.

4. In comparison to the report of 1976 the number of incidences has slightly increased from 76 cases in 1976 to 113 cases in 1977. That difference corresponds fairely with the habitual variation from one year to another.

Furthermore, we have observed that the number of rabies cases in the same districts may from one year to another, either increase or decrease, or rabies even disappears completely for a certain period of time without a change in prophylactic control measures.

We are of the oppinion that rabies itself can lead to a considerable diminution of the fox population in zones with natural foci and consequently to a reduction of incidences or even to a total epizootological "calm".

2.18. Rabies in Spain.
by J.R. Prieto Herrero

In regard to the present rabies situation in Spain we are extremely optimistic if we only compare the number of rabies cases in 1976 (43) to those in 1977 (6). Despite the fact that of the 6 cases two occured in foxes, it appears unlikely that there is any relation among these cases. However, precaution seems to be justified, especially in connection with the fox case from Casabermeja, which was diagnosed most recently (Dec. 12, 1977) and which occured in a village on the edge of the Sierra Nevada mountain range.

2.19. Sweden.

The country continued to remain rabies-free.

2.20. Rabies in Switzerland.
by A. Wandeler

Newly invaded by rabies during the 4th quarter of 1977 was the canton Geneva. The two frontwaves advancing toward the rabies free area in the central midlands were covering new territory in the cantons of Berne and Fribourg. The pre-alpine area of eastern Switzerland is also experiencing increased incidences of rabies. The number of rabid cats in canton Vaud was still higher this time. Still entirely free from rabies are the cantons Valais and Ticino. A case of human rabies is reported separately.

2.21. Rabies in Turkey.
by M. Suphi CETIN and F. YÜCEL

Rabies in Turkey has typical canine rabies character, almost 99 % of the cases occuring in domestic animals.

During the 1970th, a steady increase in the number of rabies cases has been observed (see Table). The increase occurred despite of enforced preventive and control measures such as prophylactic vaccination and killing of stray dogs.

Table: Number of animal rabies cases in 67 provinces of Turkey during 1970-1977

	1970	1971	1972	1973	1974	1975	1976	1977
Total No. of cases:	693	660	756	964	957	1055	1075	1171

In 1977 a 9 % total increase of cases was registered as compared to 1976. During 1977 and compared to 1976 the following provinces showed a marked increase in rabies cases (the figures in parenthesis are cases for 1976 followed by those for 1977):

Ankara (20-52), Corum (13-47), Izmir (104-131), Mugla (19-31), Sakarya (49-69), Samsun (93-131), and Sinop (19-45).

The distribution of rabies cases in Turkey during the 4th quarter of 1977 is shown in a map of the Annex.

2.22. Rabies in Yugoslavia.

No reports obtained for quarter 3 and 4, 1977.

3. MISCELLANEOUS

3.1. A New Case of Human Rabies in Switzerland.

by A. Wandeler

On November 12 the Swiss Rabies Center received material from a patient who had died one day after presenting signs of clinical rabies. The suspicion of rabies was confirmed by fluorescent antibody technique on brain material. Rabies virus was isolated from the brain and salivary glands.

The following results of an anamnestic and epidemiologic investigation are provided by Dr.F. Mêan, Centre Hospitalier Universitaire Vaudois, Lausanne.

The 30 year old man was rearing and training sled dogs in a village of the rabies enzootic area in canton Vaud. One of his dogs escaped for a period of several days in June 1977. This Swiss bred dog was allegedly vaccinated against rabies on May 12 1977. In early September it showed signs of aggressiveness and gastrointestinal troubles. The dog keeper was bitten (probably in the right wrist) by this dog between September 4 and 7. The dog died on September 7, two days after laparatomy for assumed intestinal obstruction. Its body was destroyed without beeing examined. The dog keeper showed distinct changes in character from October 17 on. On November 7 increased irritability, dysphagia for liquids, and pain in the right arm became apparent. He visited a hospital for examination, but opposed to stay. Returned home his general status deteriorated. On November

11 he fell into deep coma. He was brought to a hospital where he died the same day. Sixty-three contacts were vaccinated and are followed up.

3.2. A case of Human Rabies in Poland.
by D. Seroka

In August 1977, there was one case of human rabies in the wojewodztwo Ciechanowskie, Poland. The victim was unvaccinated and had been bitten by a fox, presumably in the hand, during June 1977.

3.3. WHO Informal Consultation on Reference Preparations and Potency Tests for Rabies Vaccines.

The above Consultation was held during the WHO/IABS Joint Symposium on Standardization of Rabies Vaccines for Human Use produced in Tissue Cultures, Marburg, 20-24 November 1977.

The conclusions and recommendations are as follows:

INTRODUCTION

In 1975 WHO initiated collaborative studies on various potency tests for rabies vaccines. In addition to the classical NIH test, newer procedures such as the antibody binding test and the production of neutralizing antibody in mice have been compared. Various methods have been used to determine neutralizing antibody: mouse inoculation and rapid fluorescent focus inhibition (RFFIT).

Following the first assessment of these comparative studies, to which 11 laboratories in eight countries contributed, further investigations were carried out on two candidates for a new international reference preparation of rabies vaccine. The results were discussed at the above informal consultation, which was held in conjunction with the WHO/IABS Symposium on Standardization of Rabies Vaccines for Human Use.

Three working groups were formed during this symposium to propose the new reference preparation, suitable potency tests and the requirements for vaccines in the field which are used in reduced immunization schedules. Moreover, recommendations for future research on the role of interferon and cellular immunity were elaborated.

A. Proposed international reference rabies vaccine (HDC-origin) and the potency tests for this product.

1. Reference rabies vaccine

(a) No significant differences between either candidate reference vaccine tested in this collaborative study were observed. Both are highly potent when assayed by the NIH test, antibody binding test or the induction of antibody in immunized mice. In this last test, the dose-response lines drawn using the geometric mean antibody values calculated for both products are parallel to the present WHO reference vaccine and to each other. Finally, both vaccines demonstrate satisfactory stability in the thermal degradation test.

(b) It is therefore recommended that:

(i) both products be accepted by WHO for use as an international reference rabies vaccine;

(ii) the two preparations be used sequentially. It is proposed that CRV 2 be used first, followed by CRV 1 when the supply of CRV 2 is exhausted. However, the final decision rests with the WHO Expert Committee on Biological Standardization;

(iii) a unit value be assigned to each product based on the NIH antigenic values obtained in the collaborative study - CRV 1, with an antigenic value of 11 would then contain 11 units/ml and CRV 2 with an antigenic value of 6 would contain 6 units/ml;

(iv) the international reference be used by all national control laboratories to standardize their own reference rabies preparation;

(v) a liberal distribution policy be adopted by WHO with respect to the new international reference so that control laboratories may receive enough vials to perform statistically adequate comparisons. Up to 10 tests may be required for this determination.

2. Potency tests

The following recommendations were made:

(a) All cell culture vaccines must be tested by the NIH, antibody induction or antibody binding test. If a laboratory is performing the Habel test and they cannot change to the NIH test, they should continue to use the Habel test. This covers all vaccines except those of cell culture origin;

(b) WHO should encourage all laboratories performing the NIH test to apply in parallel the antibody induction test using either mouse serum neutralization (MSN), rapid fluorescent focus inhibition test (RFFIT) or other tests of equal sensitivity for measuring rabies neutralizing antibody. For purposes of comparison, the dilutions of both the reference and test vaccines should be the same;

(c) the antibody binding test may be used as an "in process" test in the manufacture of cell culture vaccine, e.g. to determine approximate antigenic value of bulk vaccine;

(d) the NIH test, antibody binding test and tests for detection of rabies antibody should be monitored for variability by the laboratory performing them. This can be done by keeping a continuous record of the reference preparation used in each test and discarding as invalid any test in which the reference ED_{50} is outside two standard deviation limits of the geometric mean reference ED_{50} value. All the above tests should be performed in sufficient numbers to achieve statistically significant results.

A further development of the NIH test using a single vaccination should be attempted and the results compared with that of the classical NIH test.

(e) research should continue on the post-exposure efficacy of inactivated vaccines in laboratory animals;

(f) freeze-dried vaccines should be tested for stability according to the recommendations of the WHO Expert Committee on Biological Standardization.[1] A test for potency should be made on each filling lot after storage of samples for four weeks at 37°C, and to be satisfactory the lot should show no loss in potency.

B. Vaccine potency requirements for reduced immunization schedules and pre-exposure treatment.

The various vaccines and schedules applied with less than 14 daily doses for initial immunization were reviewed. Proposals were elaborated for the potency required for such vaccines. Consideration was also given to the antibody level which should be attained by pre-exposure treatment and to the problem of treatment in case of exposure of pre-treated individuals.

Since the results of wide experience in comparable studies on the potency of vaccines is available on the basis of the NIH test, potency requirements are suggested in the following in terms of the antigenic value determined by this test. The equivalents for values determined by the antibody binding test or neutralizing antibody production in mice have yet to be established.

For post-exposure treatment two groups of vaccines can be distinguished, apart from classical vaccine types:

(a) Vaccine given in six inoculations, of which four doses can be considered as initial inoculations and two as booster inoculations.

Human diploid cell culture vaccine - given on days 0, 3, 7, 14, 30, 90 in doses of 1 ml (used mainly in Denmark, Federal Republic of Germany, France, Iran, Switzerland and some non-infected European countries such as Sweden and the United Kingdom). In combination with immunoglobulin the same schedule is used.

Minimum antigenic value recommended = 2.5

(b) Vaccines given in nine to 10 inoculations of which six or seven can be considered as initial inoculations and two to three as booster inoculations.

Primary hamster kidney cell culture vaccine (unconcentrated) given in doses of 4.5 ml or 3 ml on days 0, 1, 2, 3, 4, 5, 15, 25, 95 (used in the German Democratic Republic). When immunoglobulins or antisera are applied, the full course of 14 initial inoculations is given, followed by three boosters on days 23, 33 and 103.

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1) Wld Hlth Org. techn. Rep. Ser., 1973, No. 530.

Minimum antigenic value recommended = 1.3

Suckling mouse brain vaccine (1.5%) given in doses of 2 ml on days:

0, 1, 2, 3, 4, 9, 13, 20, 90 - if no immunoglobulin or antiserum is applied

or

0, 1, 2, 3, 4, 9, 13, 23, 29, 90 - if passive immunization is applied as well

(used mainly in France)

Minimum antigenic value recommended = 1.3

This requirement may also be used for other brain tissue vaccines when their application schedule is shortened in a similar way.

Speed and rate of seroconversion

It was stressed that new vaccines used for reduced immunization schedules should guarantee a rate of seroconversion of almost 100% within 21 days. The RFFIT should preferably be used for rapid determination and monitoring of conversion.

Pre-exposure immunization

Besides the new vaccines used for post-exposure treatment, primary hamster kidney cell culture vaccine after threefold concentration is used for pre-exposure treatment in Canada and some other countries. In France a foetal bovine kidney cell culture vaccine (concentrated by zone-ultracentrifugation) has been given to about 1000 persons for pre-exposure immunization.

Vaccination schedules

HDC vaccine (1 ml per dose):

in France - days 0, 28

in the Federal Republic of Germany - days 0, 28, 56

or days 0, (3), 7, 21

in Switzerland - mainly as in France, but also as in the Federal Republic of Germany

Primary hamster kidney cell culture vaccine (5 ml):

in the USSR - days 0, 10

Suckling mouse brain vaccine:

in France - days 0, 21, 42 subcutaneously 2 ml
or days 0, 21, 42 intradermally, total of 0.25 ml administered at two sites

Monitoring of immune response

In some countries the determination of antibody response has become routine practice. Therefore, the strict harmonization of immunization schedules is of minor significance. It should however be noted that two inoculations of HDC vaccine were found insufficient in some cases.

It was suggested that the serum be tested four weeks after the last inoculation and at that time a minimum value of 0.5 I.U. per ml be attained. The test procedures must ensure that the seroconversion can be demonstrated and is clearly distinguishable from non-specific inhibition.

Post-exposure treatment in previously vaccinated persons

Although the WHO Expert Committee had noted[1] that, in previously vaccinated persons with proven seroconversion, one single inoculation of a vaccine suffices for a marked anamnestic reaction even after an interval of more than 10 years, most countries apply in such cases more than one dose of a potent vaccine. Two schemes can be considered, i.e. one to four inoculations on days 0, 3, 7 and 20 depending on the schedule of previous inoculations, the interval between last vaccination and exposure, the severity of exposure and the vaccine type (i.e. its potency). In case of previous inoculations of a vaccine of proven immunogenic value but without determination of neutralizing antibody the Expert Committee recommended the use of potent vaccines on days 0, 10, 20 and 90 after re-exposure.

Immunoglobulin may be omitted in cases of such reduced courses of vaccine doses after re-exposure. Revaccination after exposure requires assessment of all risk factors and immunological conditions. Therefore special advisory services should be established to deal with each individual case.

Antibody profile in man

Studies will be carried out in Essen (Professor Kuwert) on the antibody profile produced by tissue culture vaccines in man. HDC vaccines of two producers and primary hamster kidney cell culture vaccine will be included. The human trials will be carried out according to national requirements and regulations. International cooperation will be ensured for the testing of the sera by different institutes. It is proposed to ask the laboratories in Moscow (Dr. Selimov), Essen (Dr. Kuwert), Tuebingen (Dr. L.G. Schneider) and Potsdam (Dr. Sinnecker) to test the sera in parallel. These comparative studies will evaluate important procedures for determining the neutralizing activity in terms of International Units. This becomes essential in view of the wide variation of results obtained in preceding collaborative studies. Attempts should be made to include in all these investigations the RFFIT in order to compare its accuracy with the mouse neutralization test.

Review of recommendations

These recommendations should be subject to periodic review and changes made immediately when further results become available.

C. Future research on interferon, interferon-inducers and cell-mediated immunity.

Conclusions

1. Work in various animal models has shown that the combination of interferon and vaccine (or interferon-inducers and vaccine) is more

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1) Wld Hlth Org. techn. Rep. Ser., 1973, No. 523.

effective than vaccine alone. Thefs appears to be due to the local production and introduction of interferon.

2. Experimental evidence has shown that cell-mediated immunity may play an important role in protection from rabies infection. The possibility that the protective activity of interferon is dependent on its regulatory activity on cellular immune responses and not on its direct viral inhibition activity should not be disregarded.

Recommendations

1. Studies should be carried out to determine what substance induces interferon in interferonogenic vaccines: nucleic acid, nucleocapsid, glycoprotein, whole virions or the cell substrate.

2. Studies should be carried out in man to determine whether the combination of interferon and vaccine (or interferon-inducers and vaccine) is as effective as in animal models. Cooperative projects should first be carried out in a limited number of non-exposed persons to determine the minimum quantities of either exogenous interferon or inducer(s) that will give interferon levels similar to those noted in protected rhesus monkeys. These studies should include the injection of approved rabies vaccine(s) which would be expected to induce antibody levels also similar to those noted in the protected monkeys (Jour. inf. Dis., 1977, 136, 286-291). In order to ensure that no suppression of the immune response occurs in these people a group of persons receiving vaccine alone should be included (0, 3, 7 days).

3. All human leukocyte interferon determinations should be expressed in terms of research standard preparations (BRS 69-19).

4. The role of interferon should be determined in persons already showing symptoms of rabies. These studies can be carried out in specialized hospitals, for example, Pasteur Institute in Teheran and the Claude Bernard Hospital in Paris.

5. In order to determine the role of cellular immunity in post-exposure rabies prophylaxis, studies should be conducted in humans undergoing antirabies prophylactic vaccination or post-exposure rabies treatment in order to demonstrate the presence of indicators of cell mediated immunity, such as migration inhibition factor (MIF), secondary in vitro stimulation of peripheral lymphocytes by rabies antigen or action of specific mitogens.

AUT A U S T R I A : 1.1O. - 31.12.1977

CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
V 1	Bludenz							o	3	-	-	-	-	3		3
V 2	Bregenz	-	-	1	-	-	-	1	3	-	1	1	-	5		6
V 3	Feldkirch	1	-	-	-	-	-	1	3	-	2	-	-	5		6
V 4	Dornbirn	-	1	1	-	1	-	3	20	1	-	-	-	21		24
T 1	Imst	-	2	-	-	-	-	2	1	-	-	-	-	1		3
T 2	Innsbruck	1	6	-	-	3	-	10	96	3	-	9	-	108		118
T 3	Kitzbühel							o	2	1	-	-	-	3		3
T 4	Kufstein	-	1	-	-	-	-	1	2	-	-	-	-	2		3
T 6	Lienz	1	-	-	-	18	-	19	73	3	2	6	-	84		103
T 7	Reutte							o	12	2	1	1	-	16		16
T 8	Schwaz	1	2	1	-	3	-	7	87	2	1	2	-	92		99
S 1	Hallein							o	2	1	1	1	-	5		5
S 2	Salzburg/U.	-	3	-	-	-	-	3	11	2	4	7	1	25		28
S 3	St. Johann	-	-	2	-	-	-	2	10	-	2	-	-	12		14
S 4	Tamsweg	-	2	11	-	1	-	14	97	1	-	4	-	102		116
S 5	Zell/See	-	-	1	-	-	-	1	6	2	1	1	-	10		11
O 1	Braunau	-	3	-	-	-	-	3	34	-	1	5	1	41		44
O 4	Gmunden	-	-	-	-	1	-	1	20	4	1	3	-	28		29
O 14	Vöcklabruck							o	12	1	2	8	-	23		23
K 1	Hermagor							o	30	-	-	-	-	30		30
K 2	Klagenfurt							o	20	-	-	-	-	20		20
K 3	St.Veit/Gl.							o	22	1	-	1	-	24		24
K 4	Spital/Dr.	-	2	8	-	2	-	12	48	1	1	9	-	59		71
K 5	Villach							o	4	-	-	-	-	4		4
ST 11	Liezen	-	-	7	-	6	-	13	112	6	3	14	-	135		148
ST 13	Murau	1	4	1	-	-	-	6	26	2	1	6	-	35		41
B 2	Güssing							o	4	-	-	-	-	4		4
B 5	Neusiedl/See							o	6	-	-	-	-	6		6
B 6	Oberpullendorf							o	1	-	-	-	-	1		1
B 7	Oberwarth							o	12	-	-	-	-	12		12
	T o t a l :	5	26	33	-	35	-	99	779	33	24	78	2	916	-	1015

CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
DEN	DENMARK															
050503	Bov							o	2	-	-	-	-	2		2
050519	Lundtofte							o	1	-	-	-	-	1		1
	T o t a l :							o	3	-	-	-	-	3		3
BEL	BELGIUM															
Lg	Liège	-	1	-	-	-	-	1	1	-	-	-	-	1		2
Lug	Luxembourg	-	-	3	-	-	-	3	3	-	2	-	-	5		8
Na	Namur	-	-	1	-	-	-	1	2	-	-	-	-	2		3
	T o t a l :	-	1	4	-	-	-	5	6	-	2	-	-	8		13
ITA	ITALY															
39030	Val Aurina							o	14	2	-	-	-	16		16
39030	D-Gais							o	4	-	-	1	-	5		5
39030I	Rasun-Auterselva							o	1	-	-	-	-	1		1
39031	Brunico							o	1	-	-	-	-	1		1
39032	Campo Tures							o	-	-	-	1	-	1		1
39034	Dobbiaco							o	2	-	-	-	-	2		2
39035	Val Casies							o	1	-	-	-	-	1		1
39038	S.Candido							o	1	-	-	-	-	1		1
39039	Villa Bassa							o	1	-	-	-	-	1		1
	T o t a l :							o	25	2	-	2	-	29	-	29
CSR	CZECH SOC.REP.															
00	District of Prague							o						o		o
03	Central Bohemia							o	12	3	-	-	-	15		15
04	South Bohemia							o	3	-	-	-	-	3		3
02	West Bohemia	-	1	-	-	-	-	1	32	-	-	-	-	32		33
01	North Bohemia	-	2	-	-	-	-	2	33	-	2	2	-	37		39
05	East Bohemia	1	-	-	-	-	-	1	5	-	-	-	-	5		6
06	South Moravia							o								o
07	North Moravia	-	1	-	-	-	-	1	3	-	-	1	-	4		5
	T o t a l :	1	4	-	-	-	-	5	88	3	2	3	-	96	-	101

DEU FEDERAL REPUBLIC OF GERMANY: Rabies Cases 1.10. - 31.12.1977

CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
010	Schleswig-Holstein	1	1	4	-	-	-	6	28	-	1	2	-	31		37
020	Hamburg	-	2	-	-	-	-	2	1	-	-	-	-	1		3
031	Hannover	2	1	-	-	-	-	3	4	-	-	-	-	4		7
032	Hildesheim	1	1	10	1	-	-	13	29	1	2	4	3	39		52
033	Lüneburg	1	-	8	2	2	-	13	33	-	2	5	-	40		53
034	Stade							o						o		o
035	Osnabrück							o	6	-	-	1	1	8		8
036	Aurich							o						o		o
037	Braunschweig	1	3	3	-	-	-	7	23	1	-	2	-	26		33
038	Oldenburg							o	2	-	-	-	-	2		2
040	Bremen							o						o		o
051	Düsseldorf							o						o		o
053	Köln	1	-	1	1	-	-	3	10	-	-	-	-	10		13
055	Münster	1	-	-	-	-	-	1	2	-	-	-	-	2		3
057	Detmold							o	4	-	-	-	-	4		4
059	Arnsberg	-	-	9	-	-	-	9	9	-	-	2	-	11		20
061	Darmstadt	-	4	1	1	-	-	6	29	-	2	3	-	34		40
062	Kassel	-	1	10	1	2	-	14	52	1	2	2	-	57		71
071	Koblenz	1	4	-	-	3	-	8	41	-	1	4	1	47		55
072	Trier	1	2	1	-	-	-	4	10	-	1	1	-	12		16
073	Rheinhessen-Pfalz	1	-	-	-	-	-	1	3	-	1	-	-	4		5
081	Stuttgart	1	1	8	-	1	-	11	81	1	-	5	-	87		98
082	Karlsruhe	1	3	-	-	-	-	4	70	3	1	5	-	79		83
083	Freiburg	-	4	4	-	-	-	8	136	2	3	15	-	156		164
084	Tübingen	-	2	7	-	2	-	11	45	-	1	3	-	49		60
091	Oberbayern	-	1	2	-	1	-	4	46	3	10	4	4	67		71
092	Niederbayern							o	18	2	1	1	1	23		23
093	Oberpfalz	2	4	-	-	1	-	7	35	-	2	-	-	37		44
094	Oberfranken	-	1	-	-	-	-	1	7	-	1	1	-	9		10
095	Mittelfranken							o	12	-	1	-	-	13		13
096	Unterfranken	-	-	-	1	-	-	1	10	-	-	1	-	11		12
097	Schwaben	1	1	6	-	-	-	8	20	-	2	2	2	26		34
100	Saarland							o						o		o
110	Berlin							o						o		o
	Total:	16	36	74	7	12	-	145	733	14	34	63	12	889	-	1034

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F R A N C E : Rabies Cases 1.10. - 31.12.1977

CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
01	Ain							0	31	2	-	-	-	33		33
02	Aisne	-	4	1	-	-	-	5	11	-	-	-	-	11		16
08	Ardennes	1	2	13	-	1	-	17	4	-	-	-	-	4		21
21	Côte d'Or							0	3	-	-	-	-	3		3
25	Doubs	-	2	-	-	-	-	2	3	-	-	-	-	3		5
39	Jura	1	2	1	1	2	-	7	26	1	-	-	-	27		34
51	Marne	-	-	1	-	-	-	1	8	-	-	-	-	8		9
52	Marne Haute	-	1	1	-	2	-	4	5	-	-	-	-	5		9
54	Meurte & Moselle	-	3	2	-	2	-	7	14	-	-	-	-	14		21
55	Meuse	1	4	34	1	5	-	45	14	-	-	-	-	14		59
57	Moselle	-	-	8	-	-	-	8	10	-	-	1	-	11		19
58	Nièvre							0	3	-	-	-	-	3		3
60	Oise							0	14	-	-	-	-	14		14
67	Rhin Bas	1	-	-	-	-	-	1	16	-	-	-	-	16		17
68	Rhin Haut	2	1	-	1	2	-	6	20	-	-	1	3	24		30
70	Saône Haute							-	2	-	-	-	-	2		2
77	Seine & Marne	-	-	-	-	1	-	1	5	-	-	-	-	5		6
80	Somme							0	19	-	-	-	-	19		19
88	Vosges	-	-	-	-	2	-	2	30	-	-	-	-	30		32
89	Yonne	-	2	1	-	1	-	4	13	-	-	-	-	13		17
90	Terr.de Belfort	-	-	1	-	-	-	1	3	-	-	-	-	3		4
95	Val d'Oise	1	-	2	-	-	-	3	10	-	-	-	-	10		13
	T o t a l :	7	21	65	3	18	-	114	264	3	-	2	3	272	-	386

HUN HUNGARY : Rabies Cases 1.10. - 31.12.1977

CODE / NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
02 Baranya	-	1	-	-	1	-	2	19	-	-	2	-	21		23
03 Bács-Kiskun	1	1	1	-	-	-	3	12	-	-	-	-	12		15
04 Békés							0	10	-	-	-	-	10		10
05 Borsod	-	2	-	-	-	-	2	16	-	-	-	-	16		18
06 Csongrad	1	-	-	-	-	-	1	9	-	-	-	-	9		10
07 Fejér							0	21	-	-	-	-	21		21
08 Györ-Sopron	1	-	-	-	-	-	1	11	-	-	-	-	11		12
09 Hajdu-Bihar	-	-	1	-	-	-	1	16	-	-	-	-	16		17
10 Heves							0	9	-	-	-	1	10		10
11 Komárom	-	1	-	-	-	-	1	14	-	-	-	-	14		15
12 Nógrád							0	4	-	-	-	-	4		4
13 Pest							0	9	-	-	-	-	9		9
14 Somogy	-	1	-	-	-	-	1	19	-	-	-	-	19		20
15 Szaboles-Szatmár	-	-	1	-	-	-	1	5	-	-	-	-	5		6
16 Szolnok							0	7	-	-	-	-	7		7
17 Tolna	2	-	-	-	-	-	2	4	-	-	-	-	4		6
18 Vas							0	23	-	-	-	-	23		23
19 Veszprém	-	1	-	-	-	-	1	17	-	-	-	-	17		18
20 Zala							0	6	-	-	-	-	6		6
Total :	5	7	3	-	1	-	16	231	-	-	2	1	234	-	250

Rabies Cases: 1.10. - 31.12.1977

CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
LUX LUXEMBOURG															
0001 Luxembourg							0	1	-	-	-	-	1		1
0603 Urspelt							0	1	-	-	-	-	1		1
0602 Wincrange							0	1	-	-	-	-	1		1
0606 Grindhausen	-	-	1	-	-	-	1						0		1
0606 Hupperdange	-	-	2	-	-	-	2						0		2
0401 Bertrange							0	1	-	-	-	-	1		1
0306 Kayl							0	1	-	-	-	-	1		1
0201 Hautcharage							0	1	-	-	-	-	1		1
Total:	-	-	3	-	-	-	3	6	-	-	-	-	6	-	9
SPA SPAIN															
Casabermeja (Málaga)							0	1	-	-	-	-	1	-	1

POL POLAND : Rabies Cases 1.10. - 31.12.1977

CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
01	Warszawa							0	3	-	-	1	-	4		4
03	Biala Podlaska	-	1	1	-	-	-	2	5	1	-	-	-	6		8
05	Bialystok	-	-	6	-	-	-	6	13	-	-	-	1	14		20
07	Bielsko-Biala							0	14	-	-	-	-	14		14
09	Bydgoszcz	-	1	3	-	-	-	4	8	-	-	-	-	8		12
11	Chelm							0						0		0
13	Ciechanów	1	-	-	-	-	-	1	2	-	-	-	-	2		3
15	Częstochowa	-	-	1	-	-	-	1						0		1
17	Elblag	-	2	-	-	-	-	2	5	-	-	-	1	6		8
19	Gdańsk	-	1	-	-	-	-	1	3	-	-	-	-	3		4
21	Gorzów Wlkp							0	5	-	-	-	-	5		5
23	Jelenia Góra	-	-	-	-	1	-	1	13	-	-	-	-	13		14
25	Kalisz	-	1	-	-	-	-	1	4	-	-	-	-	4		5
27	Katowice	-	1	-	-	-	-	1						0		1
29	Kielce	1	-	1	-	-	-	2						0		2
31	Konin							0						0		0
33	Koszalin	-	1	-	-	-	-	1	13	-	-	2	-	15		16
35	Kraków							0	1	-	-	-	-	1		1
37	Krosno	1	1	-	-	-	-	2	-	-	-	-	1	1		3
39	Legnica							0	3	-	-	-	-	3		3
41	Leszno	2	-	-	-	-	-	2	8	-	-	3	-	11		13
43	Lublin							0	1	-	-	-	-	1		1
45	Łomża	-	-	2	-	-	-	2	1	-	-	-	-	1		3
47	Łódź							0						0		0
49	Nowy Sacz							0	1	-	-	-	-	1		1
51	Olsztyn	-	2	9	-	-	-	11	20	2	1	-	3	26		37
53	Opole							0	3	-	-	-	-	3		3
55	Ostrołęka	-	1	-	-	-	-	1	4	-	-	-	-	4		5
57	Piła	-	1	2	-	-	-	3	5	-	-	-	-	5		8
59	Piotrków Tryb							0						0		0
61	Płock							0	1	-	-	-	-	1		1
63	Poznań	3	2	1	-	-	-	6	17	-	-	4	-	21		27
65	Przemyśl	-	-	1	-	-	-	1						0		1

Rabies Cases : 1.10. - 31.12.1977

CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
	POLAND cont'd															
67	Radom							o						o		o
69	Rzeszów							o	2	-	-	-	-	2		2
71	Siedlce	1	2	1	-	-	-	4	13	-	-	-	-	13		17
73	Sieradz							o						o		o
75	Skierniewice							o						o		o
77	Słupsk							o	7	-	-	-	-	7		7
79	Suwałki	-	-	3	1	-	-	4	5	-	-	-	8	13		17
81	Szczecin	4	2	-	-	-	-	6	11	-	-	1	-	12		18
83	Tarnobrzeg							o	1	-	-	-	-	1		1
85	Tarnów							o	1	-	-	-	-	1		1
87	Toruń	-	1	4	1	-	-	6	6	1	-	-	2	9		15
89	Wałbrzych	-	1	-	-	-	-	1	6	-	-	-	-	6		7
91	Włocławek	1	-	-	-	-	-	1	2	-	-	2	-	4		5
93	Wrocław							o	13	-	-	-	-	13		13
95	Zamość							o	6	-	-	-	-	6		6
97	Zielona Góra	-	1	-	-	-	-	1	9	-	-	-	-	9		10
	Total :	14	22	35	2	1	-	74	235	4	1	13	16	269	-	343
RUM	RUMANIA															
1	Alba	-	-	2	-	-	-	2	2	-	-	1	1	4		6
2	Arad							o	1	-	-	-	-	1		1
4	Bacău	-	-	1	-	-	-	1	3	-	-	-	1	4		5
8	Braşov	-	-	-	-	1	-	1						o		1
12	Cluj	-	1	-	-	-	-	1	2	-	-	-	-	2		3
20	Hunedoara	-	-	4	-	-	-	4	1	-	-	-	-	1		5
23	Ilfov	-	1	-	-	-	-	1						o		1
26	Mures	1	-	-	-	-	-	1	3	-	-	-	-	3		4
31	Sălaj							o	1	-	-	-	-	1		1
32	Sibiu							o	1	-	-	-	-	1		1
33	Suceava	-	-	1	-	-	-	1						o		1
36	Tulcea	-	-	-	-	18	-	18						o		18
37	Vaslui	-	-	-	-	-	2	2						o		2
	Total :	1	2	8	-	19	2	32	14	-	-	1	2	17	-	49

TUR

T U R K E Y : Rabies Cases 1.10. - 31.12.1977

CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
1	Adana	6	-	3	-	1	-	10						0		10
3	Afyon	1	-	2	-	-	-	3						0		3
5	Amasya	4	-	7	1	-	-	12						0		12
6	Ankara	7	-	6	2	1	1	17						0		17
7	Antalya	5	-	2	-	-	-	7						0		7
9	Aydin	7	-	1	1	-	-	9						0		9
10	Balikesir	3	1	2	2	2	-	10						0		10
11	Bilecik	-	-	2	-	1	-	3						0		3
12	Bingöl	1	-	1	-	-	-	2						0		2
14	Bolu	3	1	2	-	-	-	6						0		6
15	Burdur	2	-	3	1	-	-	6						0		6
16	Bursa	1	-	-	-	-	-	1						0		1
17	Çanakkale	3	-	1	-	1	-	5						0		5
18	Çankiri	3	-	3	-	-	-	6						0		6
19	Çorum	6	-	12	-	1	2	21						0		21
20	Denizli	7	-	2	-	-	-	9						0		9
22	Edirne	1	-	-	-	-	-	1						0		1
23	Elaziğ	1	-	2	-	-	-	3						0		3
24	Erzincan	1	-	3	-	-	-	4						0		4
25	Erzurum	-	-	1	-	-	-	1						0		1
26	Eskişehir	4	-	-	-	-	-	4						0		4
28	Giresun	1	-	2	-	-	-	3						0		3
29	Gümüşhane	1	-	1	-	-	-	2						0		2
31	Hatay	1	-	-	-	-	-	1						0		1
32	Isparta	4	-	-	1	-	-	5						0		5
33	Içel	1	-	-	-	-	-	1						0		1
34	Istanbul	1	-	2	-	-	-	3						0		3
35	Izmir	22	3	4	-	-	-	29	-	-	-	-	3	3		32
36	Kars	2	-	-	-	-	-	2						0		2
37	Kastamonu	3	-	5	1	-	-	9						0		9
38	Kayseri	2	-	2	-	-	-	4						0		4
39	Kirklareli	3	-	3	-	-	-	6						0		6
40	Kirşehir	1	-	1	-	-	-	2						0		2

Rabies Cases: 1.10. - 31.12.1977

CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
	TURKEY cont'd															
41	Kocaeli	1	-	1	-	-	-	2						0		2
42	Konya	8	-	1	-	1	-	10						0		10
43	Kütahya	1	-	-	-	-	-	1						0		1
45	Manisa	2	-	1	-	-	-	3						0		3
46	K. Maraş	1	-	-	-	-	-	1						0		1
47	Mardin	1	-	-	-	-	-	1						0		1
48	Muğla	2	1	-	-	-	1	4						0		4
50	Nevsehir	1	-	-	-	-	-	1						0		1
52	Ordu	4	1	1	-	-	-	6						0		6
54	Sakarya	11	-	4	-	-	-	15						0		15
55	Samsun	17	-	4	-	2	-	23						0		23
57	Sinop	4	-	5	-	-	-	9	-	-	-	-	1	1		10
58	Sivas	4	-	1	-	-	-	5						0		5
59	Tekirdağ	-	-	1	-	-	-	1						0		1
60	Tokat	-	-	2	-	-	-	2						0		2
61	Trabzon	3	-	-	-	-	-	3						0		3
62	Tunceli	1	-	-	-	-	-	1						0		1
63	Urfa	-	-	1	-	-	-	1						0		1
64	Uşak	1	-	-	-	-	-	1						0		1
65	Van	1	-	-	-	-	-	1						0		1
66	Yozgat	1	-	-	-	-	-	1						0		1
67	Zonguldak	2	-	5	-	-	-	7						0		7
	Total:	174	7	102	9	10	4	306	-	-	-	-	4	4	-	310

Rabies Cases : 1.10. - 31.12.1977

CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
SWI	SWITZERLAND															
1	Aargau							0	1	-	-	-	-	1		1
2	Appenzell AR							0	3	-	-	-	-	3		3
3	Appenzell AI							0	1	-	-	-	-	1		1
5	Basel-Land	-	2	-	-	-	-	2	1	-	-	-	-	1		3
6	Bern	-	4	-	1	-	-	5	19	2	-	1	-	22		27
7	Freiburg	-	4	6	-	1	-	11	60	1	1	3	-	65		76
8	Genf							0	13	-	-	-	-	13		13
10	Graubünden	-	-	-	-	1	-	1	12	1	3	-	1	17		18
11	Luzern	-	-	1	-	-	-	1	2	-	-	-	-	2		3
12	Neuenburg							0	-	1	1	-	-	2		2
15	Schaffhausen							0	1	-	-	-	-	1		1
18	St. Gallen	-	1	4	-	3	-	8	16	1	-	-	-	17		25
20	Thurgau	-	1	1	-	1	-	3	8	-	3	1	-	12		15
22	Waadt	1	40	13	1	4	2	61	19	-	6	1	-	26	1	88
24	Zug							0	1	-	-	-	-	1		1
25	Zürich	-	-	-	-	1	-	1	10	2	1	-	-	13		14
	Total :	1	52	25	2	11	2	93	167	8	15	6	1	197	1	291
LIE	LIECHTENSTEIN							0	2	-	-	-	-	2		2

Rabies Cases: 1.7. - 30.9.1977

CODE / NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
LUX LUXEMBOURG															
0001 Luxembourg-Land							0	1	-	-	-	-	1		1
0405 Sandweiler							0	1	-	-	-	-	1		1
0410 Weiler-la-Tour							0	1	-	-	-	-	1		1
0610 Weiswampach							0	1	-	-	-	-	1		1
0904 Goesdorf							0	1	-	-	-	-	1		1
0912 Wilwerwiltz							0	1	-	-	-	-	1		1
0913 Winseler							0	1	-	-	-	-	1		1
1302 Dalheim							0	1	-	-	-	-	1		1
1308 Waldbredimus							0	1	-	-	-	-	1		1
Total:	-	-	-	-	-	-	0	9	-	-	-	-	9	-	9
SPA SPAIN															
Málaga							0	1	-	-	-	-	1		1
Melilla	3	-	-	-	-	-	3						0		3
Total:	3	-	-	-	-	-	3	1	-	-	-	-	1	-	4

SSR SLOVAKIA: Rabies Cases: 1.7. - 30.9.1977

CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOGS	CATS	CATTLE	HORSES	SHEEP GOATS	OTHERS	TOTAL	FOXES	BADGERS	OTHER MUSTELIDES	DEER	OTHERS	TOTAL		
1100	West Slovakia:															
1101	Bratislava-vidiek	-	1	-	-	-	-	1						o		1
1102	Dun.Streda	1	-	-	-	-	-	1						o		1
1107	Nové Zámky							o	-	-	-	-	1	1		1
1108	Senica							o	1	-	-	-	-	1		1
1109	Topoľčany	1	-	-	-	-	-	1	2	-	-	-	-	2		3
1200	Central Slovakia:															
1203	Dolný Kubín	-	1	-	-	-	-	1						o		1
1205	Lučenec	-	1	-	-	-	-	1						o		1
1206	Martin	-	1	-	-	-	-	1						o		1
1211	Zvolen							o	1	-	-	-	1	2		2
1212	Žiar n.Hr.	-	4	-	-	-	-	4	3	-	-	-	-	3		7
1213	Žilina	-	2	-	-	-	-	2						o		2
1300	East Slovakia:															
1301	Bardejov	1	-	-	-	-	-	1						o		1
1302	Humenné							o	1	-	-	-	-	1		1
1306	Prešov	-	1	-	-	-	-	1						o		1
1307	Rožňava							o	2	-	-	-	-	2		2
1308	Sp. Nová Ves	1	1	-	-	-	-	2	1	-	-	-	-	1		3
	Total:	4	12	-	-	-	-	16	11	-	-	-	2	13	-	29
RUM	RUMANIA															
1	Alba	-	2	-	-	-	-	2	3	1	-	-	-	4		6
12	Cluj	-	1	-	-	1	-	2	-	-	-	1	-	1		3
26	Mures	-	1	-	-	-	-	1	1	-	-	-	-	1		2
	Total:	-	4	-	-	1	-	5	4	1	-	1	-	6	-	11

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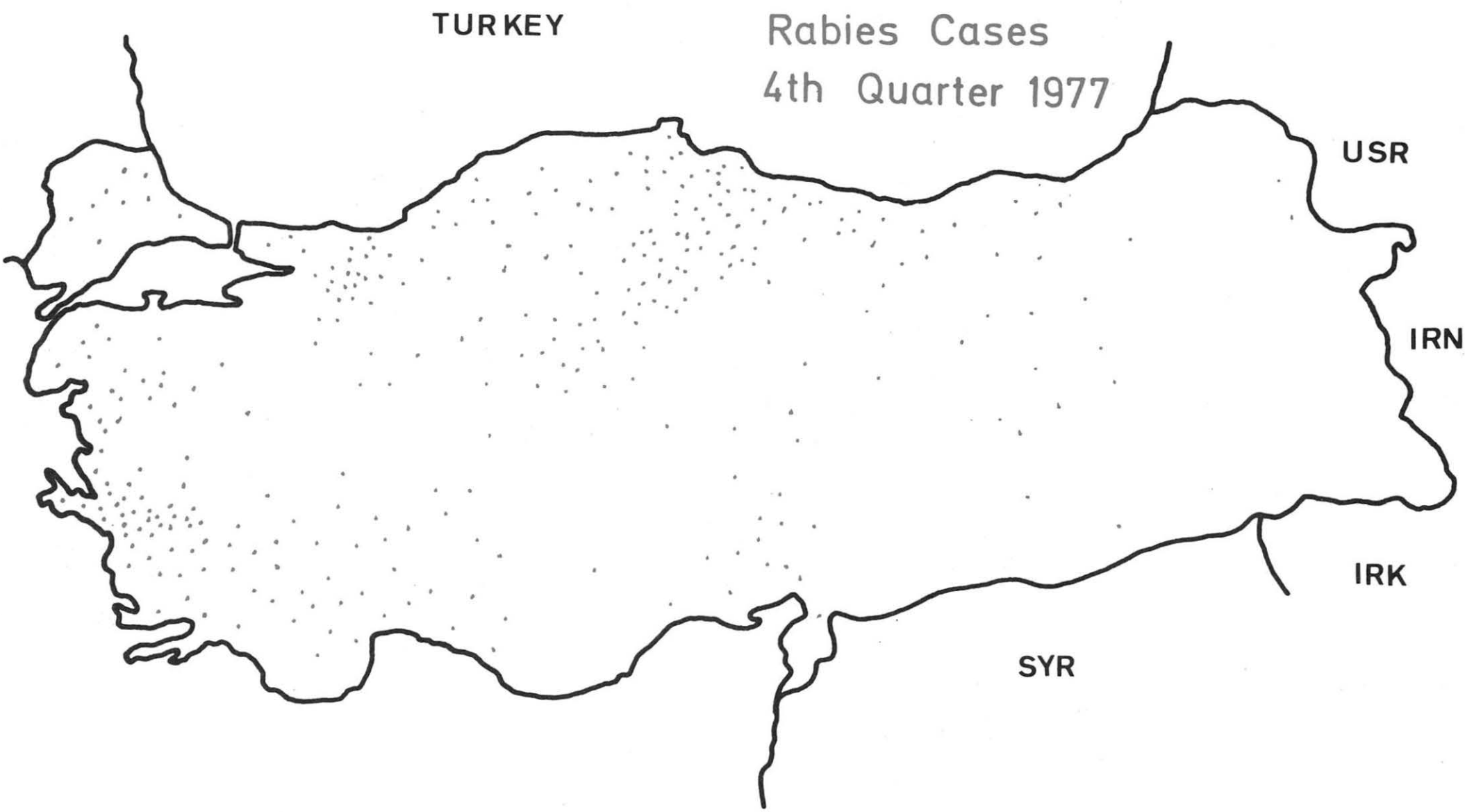
TURKEY
Rabies Cases
4th Quarter 1977
USR
IRN
IRK
SYR

WHO Coll. Centre
Tuebingen / DEU

Rabies Cases Europe
1st Quarter 1978

4806 cases reported

NOR
rabies free

SWE

DEN

GBR
rabies free

NET
no cases

BEL

DEU

DDR

POL

CZE

no data

FRA

AUT

HUN

SWI

RUM
no data

ITA

YUG
no data

BUL
no cases

POR
rabies free

SPA

ALB
no data

GRE

0 50 100 km