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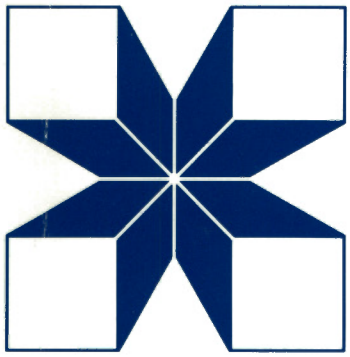

CANADA

ZOONOTIC AND PARASITIC DISEASES

PROCEEDINGS OF THE THIRD INTERNATIONAL AND PAN-ARAB SEMINAR HELD IN AMMAN, JORDAN, 17–20 OCTOBER, 1989

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Esta serie incluye ponencias de reuniones, informes internos y documentos técnicos que pueden posteriormente conformar la base de una publicación formal. El informe recibe distribución limitada entre una audiencia altamente especializada.

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ZOONOTIC AND PARASITIC DISEASES

Proceedings of the Third International and Pan-Arab Seminar held in Amman, Jordan, 17-20 October 1989

Edited by
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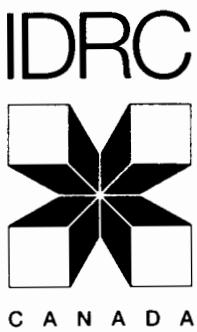

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RABIES AND RABIES POST-EXPOSURE PROPHYLAXIS

In Amman Governorate - Jordan

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It is well known that rabies is prevalent in Jordan since a long time. Many people, especially bedouins and residents of rural areas are aware of the danger of this viral zoonosis although rabies is not considered a major threat to human life. The evaluation of official statistics in Jordan shows only few mortalities in humans due to rabies. My impression is that these statistics are by no means representative and I had the opportunity to ascertain this impression during the collection of data for the present paper.

Few cases of human rabies are reported but not registered due to various reasons and so they do not show in the official statistics. Most probably, more cases of rabies in man are not reported because they were not diagnosed as such. Because human rabies is rare in Jordan, the diagnosis is especially difficult in the absence of an exposure history, and few cases of rabies would be diagnosed as encephalitis or meningoencephalitis.

The situation of rabies in animals in Jordan is not well known, and so far no surveys were carried out to identify the different types or reservoirs for rabies virus.

The laboratory diagnosis of rabies in animals is centralized in Amman at the Jordan Vaccine Institute.

Since 1981, diagnosis of rabies is done by immunofluoresence and serological tests. The fluorescent antibody test for detection of rabies antigen is the quickest and most reliable method available, both for diagnostic and research purposes.

In 1981, the Ministry of Health introduced the Cell Culture Vaccine "Human Diploid Cell Vaccine" for rabies post-exposure prophylasix. Rabies post-exposure prophylaxis is centralized at the public health department of each governorate. In Amman governorate, it is carried out at the public health department of "Amman Health Directorate". The cost of human diploid cell vaccine and specific gammaglobulins of human origin, used for rabies post-exposure prophylaxis in Jordan during the first eight months of 1989 amounted to the sum of 45 thousand Jordan Dinars and expected to reach the sum of 70 thousand J.D.s by the end of the year.

Animal Rabies

Statistics on animal rabies are derived from the number of tissue specimens submitted to the Vaccine Institute in Amman and proved positive by immunofluorescent antibody test.

These represent only a fraction of those occurring in wildlife. Because the animals examined are in fact a group of highly suspected animals involved in biting incidents, the proportion of those proven to be rabid is excessively high, Table "I", and does not represent the real situation.

Most wild animals involved in biting incidents and examined by laboratory tests were found to be rabid, and as a result we should consider wild animals attacking humans in urban and peri-urban areas as rabid unless proved otherwise.

Because the numbers shown in Table "II" and Table "III" are so few and the group of animals from which they are drawn is not representative, it is not possible to submit them to any meaningful analysis. Nevertheless, it is useful to consider the following two points:

1 - In Jordan it seems that canine rabies is the most prevalent with foci of wildlife rabies "foxes, hyaena, wolves, etc. ...".

Table I. Number of animals examined for rabies at the Vaccine Institute during 1983-1988 in Jordan

Year	1983	1984	1985	1986	1987	1988
Number of animals examined	52	24	34	24	18	20
Number of animals found infected	21	4	12	5	5	5
% of infected animals	40%	17%	35%	21%	28%	25%

* Using immunofluorescent antibody test

Table II. Number of animals identified by laboratory tests as rabid, during the period 1983-1988 in Amman governorate

1983	1984	1985	1986	1987	1988
4 dogs	——	2 dogs	1 hyaena	1 wolf	1 fox

Table III. Number of animals identified by laboratory tests as rabid, during the period 1985-1988 in Jordan

Type of animal / Year	Dog	Donkey	Wolf	Fox	Hyaena	Cow	Goat
1985	8	1	1	——	——	1	——
1986	1	2	——	1	1	——	——
1987	1	1	2	1	——	——	——
1988	2	——	——	2	——	——	1

2 - Cases of rabies in domestic animals are an overspill from wildlife rabies. Sequences of infection in dogs and cats are very rare and if they occur consist only of a few cases.

In order to identify the different types of reservoirs for rabies virus and the prevailing epidemiological patterns, surveys should be done in domestic and wild carnivores, including stray dogs, cats and possibly rats.

Human Rabies

In Jordan, during the period 1972-1982, eleven cases of human rabies were recorded, thus averaging one case per year. No official statistics were available for the period 1983-1988. In 1985, in Al-Tafila governorate a 25-year-old man died of rabies

after he was bitten by a rabid wolf and the incident was widely circulated in local newspapers. The wolf was killed and proved to be rabid by laboratory tests carried out at the Vaccine Institute in Amman.

In Amman governorate during the period 1977-1988 only two cases of human rabies were reported, one in 1981 and the other in 1988. In 1981 in the city of Amman, a story dog attacked several persons and domestic animals before being killed. Laboratory tests confirmed that the dog was rabid.

A six-year-old boy was bitten on the upper extremities by that rabid dog. His father sought medical assistance only after one month when the disease progressed with typical symptoms of rabies and the boy died 40 days after the bite.

In 1988 a four-year-old girl from the town of "Sahab" at 15 kilometers east of Amman, presented to the casualty department of Al-Basheer hospital. She complained of fever, sore throat and inability to walk and was diagnosed as meningitis and died a few days after admission. On questioning her family, they admitted that she might have been bitten by a fox and consequently her brain was sent to the Vaccine Institute to rule out rabies. Immunofluorescent tests confirmed that the girl was infected with the rabies virus.

Table IV. Reported rabies cases in humans during the period 1972-1988 in Jordan

Year	Number of cases	Year	Number of cases
1972	——	1981	1
1973	1	1982	3
1974	2	1983-1984	N.A
1975	3	1985	1 at least
1976	1	1986-1987	N.A
1977-1980	——	1988	1 at least

From these two rabies case-histories we should emphasize the following points:

1. In the two cases, medical assistance was not sought until very late when the opportunity to start rabies post-exposure prophylaxis was lost.

   Education of the public regarding the danger of animal bites, especially stray dogs and wild animals is very important and necessary.

2. Because human rabies is rare in Jordan, the diagnosis is especially difficult in the absence of an exposure history. Doctors should consider rabies in the differential diagnosis of any person with a rapidly progressive encephalitis or meningoencephalitis and they should question the patient's family very carefully to elicit any probable exposure to animal bite, scratch or contact.

Human Rabies Post-Exposure Prophylaxis

The department of public health in the "Amman Directorate of Health" is the only centre in Amman governorate where anti-rabies prophylaxis is carried out routinely. The vaccine in use is the Human Diploid Cell Vaccine "HDCV". A six dose vaccine regimen is followed "days 0, 3, 7, 14, 28 and 90". Day 0 refers to the day of initiation of vaccination.

Several factors must be considered in combination before deciding to give the HDCV, because it is quite expensive and should be used in a rational way. These factors are:

1 - The species of animal.

2 - The location of the animal.

3 - The circumstances of the incident.

4 - The type of exposure.

5 - The severity of the exposure.

6 - The rabies epidemiology in the region.

7 - The vaccination status of the animal.

In sever bites involving wild animals or dogs thought to be rabid, "Human Rabies Immunoglobulin" is given in addition to HDCV. In biting incidents involving healthy domestic dogs or cats, the

animal should be confined and observed for 10 days and evaluated by a veterinarian at the first sign of illness. No treatment is given to the exposed person unless the animal develops rabies.

In 1988, 298 persons received anti-rabies post-exposure prophylaxis at the public health department in "Amman Directorate of Health".

The distribution by sex remained the same during the period 1981-1988. About 20% of persons who received anti-rabies post-exposure prophylaxis were females and 80% males.

The distribution by age of person who reported to the anti-rabies centre, showed that 25% of them are below ten years and about two thirds of them below twenty years of age.

There appears to be no important seasonal fluctuation in the number of persons reporting, other than a slight increase during the summer months. 40% of the persons report in the period June-September.

Table V. Human anti-rabies post-exposure prophylaxis at the public health department in Amman: Number of persons treated from 1981-1988

1981	1982	1983	1984	1985	1986	1987	1988
168	321	307	253	246	295	241	298

Table VI. Human anti-rabies post-exposure prophylaxis at the public health department in Amman: Distribution by sex of persons treated from 1981-1988

Year / Sex	1981	1982	1984	1985	1986	1987	1988
Male	77%	83%	75%	82%	81%	81%	81%
Female	23%	17%	25%	18%	19%	19%	19%

Table VII. Human anti-rabies post-exposure prophylaxis at the public health department in Amman: Distribution by age of persons treated from 1981-1988

Year	1981	1982	1984	1985	1986	1988
Age-group						
< 10 years	25%	32%	24%	25%	26%	23%
10-19 years	41%	42%	31%	39%	35%	30%
> 20 years	34%	26%	45%	36%	39%	47%

Table VIII. Human anti-rabies post-exposure prophylaxis at the public health department in Amman: Distribution by place of exposure of persons treated during the period 1986-1988

Year	1986	1987	1988
Place of Exposure			
City of Amman	195 "66%"	139 "58%"	185 "62%"
Suburbs	100 "34%"	102 "42%"	113 "38%"

More than b0% of the incidents took place in the city of Amman, and if we take into consideration that many suburbs in Amman governorate are of urban nature, we can conclude safely that the majority of incidents took place in urban settings and most probably domestic animals are the major source of incidents giving rise to consultation and anti-rabies prophylaxis.

Animals of known owners are domestic and represent half of the animals responsible for the incidents.

Table IX. Distribution of animals responsible for the incidents leading to anti-rabies prophylaxis

Year	Animal	Animals of Known Owner	Animals of Unknown Owner
1984		51%	49%
1985		51%	49%
1985		45%	55%
1988		43%	57%

Regarding animals of unknown owners, we can assume that many of them are domestic due to the following facts:

1. Many of the persons engaged in incidents with domestic animals would not say they known the owner because usually he is a friend or a neighbour and they don't like to get him in trouble with the police or with health authorities.

2. In many incidents the biting animal is domestic, but the victim simply does not know the owner.

3. As the majority of incidents take place in urban settings, it is assumed that domestic animals "mainly dogs" are responsible in the majority of cases. Nowadays few stray dogs are seen in urban areas of Amman, mainly due to activities of the "municipality of Greater Amman" - Destruction of stray dogs by poisoning and shotting.

As we can see from Table X, dogs represent the main source of exposure in biting incidents leading to rabies prophylaxis "78% - 96%", followed by cats "2% - 12%".

In one incident, a confirmed rabid wolf attacked a child in the residential area of "Abu-Nusair". This incident took place in January 1987. In another incident which took place in March 1986 in the rural area of "Ein-swema", a confirmed rabid hyaena attacked a 25 year-old farmer while working in the field.

Table X. Distribution of animals responsible for the incidents leading to anti-rabies prophylaxis in Amman governorate, 1981-1988

Year / Animal	1981	1982	1984	1985	1986	1987	1988
Dog	154 "96%"	304 "95%"	215 "87%"	208 "86%"	238 "83%"	194 "78%"	244 "83%"
Cat	3 " 2%"	6 " 2%"	18 " 7%"	21 " 9%"	19 " 7%"	26 "11%"	37 "12%"
Rat	3	4	8	7	11	10	9
Donkey	-	1	4	4	1	-	1
Monkey	1	5	3	3	16	2	3
Fox	-	-	-	-	1	2	1
Wolf	-	-	-	-	-	1	-
Hyaena	-	-	-	-	1	-	-
Others	-	-	-	2	1	1	-

In both incidents, HDCV for rabies and Human Rabies Immunoglobulins were used and both victims survived.

Conclusions

1. Based on available data and official statistics, it seems that human rabies is rather rare in Jordan. But there is no guarantee this situation will continue.

2. So far no surveys were carried out to identify the different types of reservoirs for rabies virus in Jordan. Therefore, it is necessary to establish a country-wide rabies surveillance programme to clarify this point and to identify the transmitting animals.

3. HDCV is over-used in post-exposure prophylaxis due to various reasons. The decision to vaccinate is to be made after serious consideration of the risk of infection and should be based on a rapid and reliable assessment of the infective status of the biting animal.

References

1. Dr. Adnan Abdel-hameed, Jordan Vaccine Institute: Personal Communications.

2. Ministry of Health: Annual Statistical Report, 1977.

3. Amman Directorate of Health: Annual Statistical Reports, 1983-1988.

4. Professor Wachendorfer, Director of the Veterinary Investigation Center, Frankfurt, West Germany: Report on the evaluation of the rabies situation in Jordan, May 1981.

5. Kalus E. Wagner, DVM: The problem of rabies in Jordan, short term consultancy, May 1982.