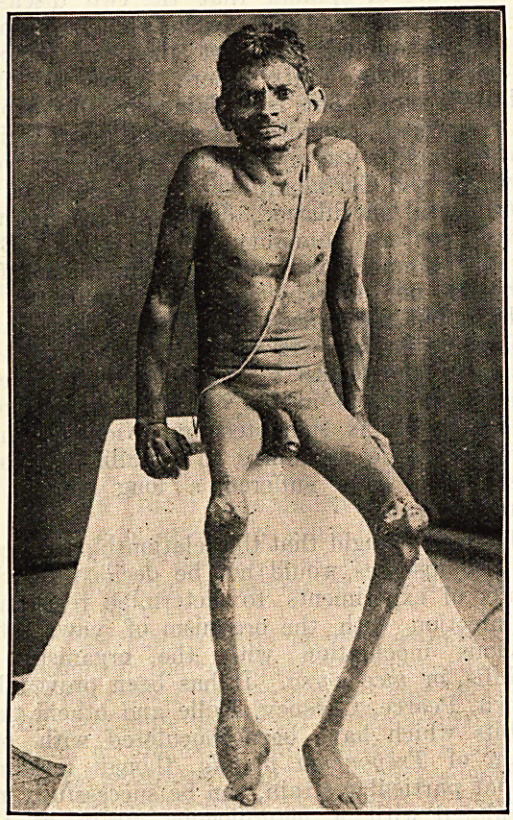
has had no special treatment for the condition. The ulcers healed and then spread. The patient finally became a cripple. Now for the past 19 years he has not suffered from any active disease.

Family history.—The patient is a native of Cochin where yaws is endemic. Unmarried. His father died when he was 16 years old. Mother alive and healthy. He has three brothers and three sisters all alive and healthy.

Present history.—Two and a half months ago he exposed himself to the risk of venereal infection and noticed a sore on his penis 15 days after exposure. About 8 weeks after the appearance of the penile lesion he developed a rash on the skin.

Condition on admission.—An ill-nourished man of 39 partly edentulous. Patient crawls about, being unable to stand and walk. Multiple, puckered, thickened scars of old ulcers on the arms, shoulder regions, buttocks, legs and feet. Both the lower extremities are badly deformed. The skin of the limbs, especially



the legs and knees, is one mass of adherent cicatricial tissue. The bones of the legs are considerably atrophied and thin. The right foot is a shapeless mass of pseudo-elephantiasis. Both the knee joints are ankylosed in the position of partial flexion. The right hand and fingers are also deformed and scarred. The accompanying photograph reveals more than any description the state of the lower limbs.

An indurated papulo-ulcerative chancre on the anterior aspect of the coronal sulcus is partly visible in the photograph. The glands in both inguinal regions are slightly enlarged, painless and discrete. Scattered papular syphilides on the trunk and limbs. No mucous membrane or muco-cutaneous lesions. No stigmata of congenital syphilis. Dark-ground examination of the serum from the chancre showed teeming *Treponema pallida*. The Kahn and Wassermann reactions of the blood were positive. The patient was put on anti-syphilitic treatment and the chancre and cutaneous rash rapidly disappeared.

(*Continued at foot of next column*)

THE TREATMENT OF ANIMALS WITH ANTIRABIC VACCINE

By R. O. A. SMITH, D.T.M., I.M.D.
Officiating Director

J. P. McGUIRE, L.M.S.S.A. (Lond.), I.M.D.

E. D. STEPHENS, D.T.M., I.M.D.

and

B. N. LAHIRI
SUBEDAR, I.M.D.

(*From the Pasteur Institute of India, Kasauli*)

THE advisability of treating animals with antirabic vaccine either as a prophylactic measure or subsequent to exposure to infection is a matter on which directors and other workers

(*Continued from previous column*)

So far as I can gather, there are not many such cases published in the literature. Hanschell (1928) related two cases, one in a male West Indian, and the other in a West African negro, who were seen by him with primary syphilis and with serological and clinical evidence of old yaws. Two other cases were reported by H. D. Chambers in 1937. In the first case, a woman who had yaws ten years previously gave birth to a child with signs of congenital syphilis and had a strongly positive Wassermann reaction. The chances of the mother transmitting yaws were considered remote. It was indirectly inferred that the mother must have been infected with syphilis. In the second case the mother had yaws two years prior to the birth of the child. This child showed no evidence of congenital syphilis, except that the Wassermann reaction was strongly positive.

Summary

1. A case is reported of early acquired syphilis in a patient with tertiary stigmata of untreated yaws of 29 years' duration.

2. The patient comes from Cochin State where yaws is endemic.

3. The photograph shows the terrible crippling and deformity caused by untreated yaws. Such profound pathological changes in the soft tissues and bone are very unusual in syphilis.

4. The presence of long-standing yaws has not conferred any immunity against syphilis and the reaction to the syphilitic infection both local (chancre) and the cutaneous was moderately severe.

My thanks are due to the Director, Barnard Institute of Radiology, for the clinical photograph.

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in Pasteur Institutes are not unanimously agreed.

One of the main reasons advanced against the treatment of animals is the difficulty of arranging for their proper segregation during the period they are at risk. From general observation in India it would seem that except in the case of dogs, and then only in certain circumscribed areas such as cantonments and well organized towns, animals exposed to infection get neither segregation nor treatment, the owner just trusting to luck that they may escape the disease. The lack of statistics renders it impossible to estimate the mortality from rabies among cattle and other useful domestic animals in India. Certain information on the subject can be obtained from the records of this Institute as the history cards of patients treated also record whether any animals have been bitten by the dogs who bit the patient. An examination of the cards of about 800 patients treated during 1937 shows the following number of animals having also been bitten :—

Species	Number bitten	REMARKS
Camels ..	2	
Buffaloes ..	50	Also 3 cards marked 'several'.
Horses ..	3	
Goats ..	10	Also 2 cards marked 'several'.
Oxen ..	47	„ 5 „ „ „
Donkeys ..	5	„ 1 card „ „

In addition there were 20 other cards where it was stated that 'several animals were bitten', but these were not specified. It is unlikely that any of the above animals received antirabic treatment and the actual mortality among them is a matter for conjecture. There were also a number of dogs said to have been bitten by the rabid ones; the disposal of dogs exposed to infection, however, will be considered separately for various reasons.

Despite such a state of affairs no death from hydrophobia has been reported among persons treated at this Institute and its centres during the past 30 years for infections caused by horses, cows, donkeys, or buffaloes (Smith, 1937). The saliva of these species of animals has been proved by different workers to contain the virus.

Provided treatment is given when necessary it would appear that rabid cattle do not constitute a grave danger to man, but their death from the disease represents a serious loss to their owners. It may therefore be assumed that no serious contra-indications exist to the treatment of this class of animal in India. The efficacy or otherwise of the treatment could be estimated by the results obtained up to date, which are given in tabular form below.

Of domestic animals which are susceptible to the disease and transmit it freely, dogs are the only ones that need be considered. The treatment of dogs may conveniently be divided into :—

(1) Prophylactic treatment.
(2) Treatment after exposure to infection.

(1) The prophylactic treatment of dogs has been recommended by the International Rabies Conference (Marie *et al.*, 1927) and there are no serious reasons why prophylactic treatment should not be carried out on a large scale in India, as is being done in certain other countries. The vaccine itself is harmless, being composed of a dead carbolized fixed virus. The suggestion that such treatment may result in conferring a partial immunity and, if the animal be subsequently infected, give rise to conditions like 'inapparent' or 'recurrent' rabies need not cause any doubts. No reports of such conditions have emanated from Japan or America where the prophylactic treatment of dogs has been practised extensively. Neither have they been noticed at this Institute which has carried out the prophylactic inoculation of dogs on a small scale for the past five years.

(2) The treatment of dogs that have been exposed to infection is a different matter and is dependent largely on the value of the animal and the nature and position of the wounds it has sustained. It may here be mentioned that this Institute does not recommend the treatment of any dog which has been severely injured on the head or neck. As dogs are so susceptible to rabies, the chances of such an animal escaping the infection are very meagre and the kinder fate for the dog and the safer one for the owner and his immediate neighbours is to destroy the animal in as humane a manner as possible. Provided however that satisfactory segregation can be arranged it has become the practice for this Institute to encourage owners of valuable dogs which have not been severely wounded on the head and neck to have them treated. The precautionary measures to be adopted when it has been decided to treat such animals are laid down in the pamphlet on *Rabies and Antirabic Treatment in India* (Shortt, 1933), and need not be recounted here.

The results of treatment with our vaccine are now being collected six months after the date of completion, as is done in the case of humans, and below in tabular form are given the figures up to date.

The mortality among dogs treated after exposure to infection for these two years is a little over 2 per cent, which, considering the special susceptibility of dogs to rabies, is a very satisfactory figure. Cows and buffaloes also seem to respond to the treatment very efficiently. The loss of 3 out of 17 horses, however, represents a mortality of over 17 per cent, which seems a high figure. Of the three deaths, one was an animal which sustained 5 wounds on the forehead and treatment was begun 7 days late. In the second which had 2 wounds, one on the face and the

TABLE

Statement showing results of animal treatment

Animal	Number of courses issued	History cards received		Total	Died of rabies	Died of suspected rabies	Remarks
		Prophylactically treated	Bitten or in contact				
1936.							
Dog	1,333	515	130	645	2	..	No deaths from rabies were reported among the animals treated prophylactically.
Horse, mule ..	18	..	10	10	..	..	
Cow, bullock, buffalo	8	..	4	4	..	..	
Elephant ..	1	..	..	..	..	..	
Cat	2	..	1	1	..	..	
Monkey ..	1	..	..	..	..	..	
Total ..	1,363	515	145	660	2	..	
1937.							
Dog	1,264	453	258	711	3	3	No deaths from rabies were reported among the animals treated prophylactically.
Horse, mule ..	28	8	17	25	3	..	
Cow, bullock, buffalo	36	..	27	27	..	..	
Cat	1	..	..	..	..	..	
Monkey ..	1	1	..	1	..	..	
Elephant ..	1	..	1	1	..	..	
Total ..	1,331	462	303	765	6	3	

other on the leg, treatment was begun 3 days late. The third was one of four treated in a remount depôt. All four animals were bitten on the nose by the same rabid dog, and treatment was begun four days after they were injured. It is gratifying to note that the other three animals survived. A dog and a buffalo, presumably infected by the same rabid animal in an adjoining village, received no treatment and died of the disease.

It may be concluded from the results that the vaccine confers a considerable degree of protection against infection, and that prophylactic and post-infectional inoculation of animals will save many lightly bitten ones that might otherwise succumb to the disease.

Treatment

The vaccine recommended for the treatment of animals is prepared in exactly the same manner as that for humans, only it is stronger, and the dosage for the different species of animals has been graduated according to their weights. For the prophylactic inoculation of dogs a series of seven daily inoculations of 6 per cent carbolized vaccine, 5 c.cm. for dogs weighing under 30 lb., and 10 c.cm. for those above that weight is recommended. Experiments conducted in the Institute have shown that the vaccine affords very efficient protection against the Indian strains of street virus, for a period of eight months and probably longer.

The following experiment was carried out to determine the efficacy of the carbolized vaccine prepared here compared with one on the open market. This proprietary vaccine is said to contain 33⅓ per cent rabies brain and cord tissue in which the virus has been killed by chloroform. It is also stated that, while the use of the single dose as a prophylactic for dogs before exposure has been found highly satisfactory, the double dose or series of injections will accomplish more. It is unfortunate that many dog owners assume therefore that a single inoculation is all that is necessary to protect their animals. That this idea is erroneous may be concluded from the results of the experiments cited below.

Fifteen dogs divided into three groups of 5 each were used in the first experiment. One group received 5 c.cm. of Kasauli antirabic vaccine for 7 days; the second group were given one injection of the proprietary vaccine mentioned above on the seventh day of inoculation of the dogs in the first batch, and the last group of 5 were kept as controls.

Twenty-five days after the treatment the dogs were given a dose of street virus into the muscles of the neck.

It is unfortunate that one dog from each batch died before the infecting dose was given, so that four animals of each group only were available for the test.

In a second experiment 15 monkeys were treated and infected under identical conditions.

The results of both experiments are given below in tabular form :—

TABLE

Comparison of Kasauli antirabic vaccine for animals and a proprietary antirabic vaccine

	Dogs			Monkeys		
		Died			Died	
	Infected	Other causes	Rabies	Infected	Other causes	Rabies
Kasauli vaccine ..	4	1	0	3*	0	0
Proprietary vaccine ..	4	1	3	5	0	3
Controls	4	0	4	5	0	2

* Two died before infection from dysentery.

The results indicate that a single dose of vaccine of the type tested composed of dead fixed virus is not sufficient to protect an animal. Hermann (1928) concluded from a number of experiments that a single inoculation of a live fixed virus as large as can safely be given is not sufficient to protect an animal.

In a country like India where no muzzling or quarantine laws are in force and the number of uncared-for and ownerless dogs is legion, efficient prophylactic immunization against rabies will afford owners who value their animals a definite measure of protection, both for their dogs and themselves.

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A Mirror of Hospital Practice

EPIDERMOLYSIS BULLOSA : A CASE REPORT

By B. M. KOTHARY, M.B., B.S.

In charge, Skin Department, Windham Hospital, Jodhpur

THE rarity of this condition is my plea for reporting the case.

A boy, aged 8 years, was admitted for multiple bullæ all over the body. The whole integument was covered with whitish scars resulting from the healing of such bullæ. The duration of his complaint was about seven years, that is, since his childhood. His sister about 12 years old was also suffering from the same disease. But another, older sister never had the trouble, nor had any of their forebears for three generations ever complained of it.

The history is that the child was attacked with small-pox during his childhood and ever since then he has been suffering from this condition. He is worse in the winter, while in the summer he is slightly better. Sometimes the bullæ are as big as lemons. Slight friction, pressure or irritation tends to produce blisters rapidly, which either rupture and dry up quickly or become secondarily infected on scratching. The bullæ are painless and do not tend to run into each other.

The nails have atrophied so much that there is no suggestion of their past existence on any finger or toe. The sites where bullæ appear most frequently are those which are exposed to pressure or injuries, namely, back of knuckles and phalanges of hands, elbows, knees, ankles and waist-line. There are no abnormalities in any other part of the body except the skin. Laboratory examinations of his blood, stools and urine do not show any abnormality.

The prognosis is reported to be unfavourable. The disease persists all through life and one is incapacitated from work. On the approach of adolescence a few lucky cases have improved, however. It certainly seems to be unfavourable in my case. Treatment is said to be unsatisfactory, and I have certainly found it to be so.

Presuming the disease to be a vasomotor disturbance due to abnormalities in the epidermis, calcium orally and intravenously was tried, but it did not improve the condition. Ergot was administered for a few days, but he developed amblyopia and therefore it had to be discontinued. Protein shock therapy was also given a trial through milk injections and autohæmotherapy. Ultra-violet exposures were given for quite a good number of sittings. Endocrinotherapy with thyroid and parathyroid extracts was also given its chance. Carbolized filtrate from the vesicles was therapeutically used. After all, the tendency to vesicle formation still persists as badly as when the patient was admitted.

I shall be grateful for any advice or suggestions for the treatment of a case of this kind.

Finally I must thank Mr. E. W. Hayward, F.R.C.S. (Ed.), Principal Medical Officer, Jodhpur State, for permission to publish this case.

MULTIPLE PERFORATIONS OF SMALL INTESTINE WITH RECOVERY

By E. H. WALLACE

CAPTAIN, I.M.S.

Civil Surgeon, Malakand

and

AMIN-UL-HAQ, M.B., B.S.

Lady Minto Hospital

A MOHAMMEDAN boy of four years was accidentally shot in the abdomen from a distance of one foot by a playmate with a 'Diana' air-rifle of German manufacture and of 0.17 grooved bore.

Operation was commenced 3½ hours after the injury and the abdomen was entered *via* a 3½ inches left paramedian incision. The pellet entered the abdomen