realized until several days later, showed several clinically characteristic features of a phaeochromocytoma paroxysm, including shivers, restlessness, and rising blood pressure (cf. beginning of Chart). The subsequent shock very nearly became fatal, but noradrenaline treatment was started, and the clinical condition improved.

The hypertensive crises within the next few days suggested the diagnosis of phaeochromocytoma. An overdosage of noradrenaline could not be the explanation of the sudden and violent increase in blood pressure, as the hypertension lasted for about 60 minutes after closure of the drip; between the crises, withdrawal of noradrenaline was invariably followed by immediate shock. Furthermore, the paroxysms continued in rapid succession when the noradrenaline was stopped on May 30.

A phentolamine test was positive but, unfortunately, was without much diagnostic value, as an increased blood urea (95–130 mg. per 100 ml.), and the administration of certain drugs (barbiturates and pethidine) within the preceding 24 hours, are known occasionally to cause false-positive depressor reactions (Hightower, 1955).

A blood analysis revealed an increase in the content of pressor amines—19 μ g. of noradrenaline + adrenaline per litre—and thus established the diagnosis of a phaeochromocytoma; further pharmacological tests were therefore considered superfluous and massage of the adrenal areas was too dangerous. The normal content of noradrenaline + adrenaline in venous blood is less than 2 μ g. per litre (Lund, 1952, 1956).

By the same technique von Euler (1952) found moderately increased values in some patients with essential hypertension, and Manger *et al.* (1954) found, with a different and less specific fluorimetric method, increased values in a few patients with uraemia (blood urea in the present case was 130–167 mg. per 100 ml.); yet values as high as 19 μ g. have never been encountered except in patients with phaeochromocytoma. Blood for analysis was sampled four days after abandonment of the noradrenaline, thus precluding the administered pressor hormone as contributing to the high blood concentration: elimination of noradrenaline is almost instantaneous.

The very high content of pressor hormones in the blood during a paroxysm seems inconsistent with diagnoses other than phaeochromocytoma, and the hypertensive attacks often conformed to classical descriptions of the typical crises in phaeochromocytoma: a steep rise in blood pressure, pulse rate, and temperature, violent shivers, and cold, pale, cyanotic skin. When the paroxysm subsided the blood pressure decreased rapidly, the patient became warm, flushed, and profusely perspiring; the pulse rate and temperature fell more slowly.

Noradrenaline treatment of our patient was instituted at a time when her condition was highly critical and the blood pressure rapidly falling. At that time a pulmonary embolus was assumed to be the cause of the shock. When a phaeochromocytoma was surmised, and later verified, we were first inclined to consider the treatment as "carrying coals to Newcastle." But the treatment proved indispensable, and the patient would have succumbed without it. The total amount of noradrenaline administered was 414.3 mg.

Conclusion and Summary

Only a few records are available of treatment of shock induced by "spontaneous" crises in phaeochromocytoma, as the occurrence is rare. Occasionally adrenaline injections have been used, but only with transient effect—for example, Evans (1937)—but noradrenaline was never given in such cases.

In the case of phaeochromocytoma here reported the diagnosis was confirmed through an analysis of the blood sampled during a hypertensive crisis. On two occasions these attacks were followed by severe shocks, which

were successfully treated with 414.3 mg. of L-noradrenaline during 7 and 24 days. Noradrenaline should always be tried in similar emergencies.

Our thanks are due to Dr. Torben Geill, chief physician of The Old People's Town, for his readiness always to assist us in the solution of the therapeutic problems, and his kindness in placing the facilities of his department at our disposal. We are grateful to Mr. M. Andreassen, senior surgeon, the State Hospital, Department D, Copenhagen, for his assistance and advice during the period when an operation was considered. We are indebted to colleagues and technicians for their assistance during several months.

The chart was drawn by Mr. Preben Saggau.

Special thanks are due to the nurses who tended the patient throughout days and nights for several months. Without their never-failing vigilance this case history might have had quite a different ending. The nurses were: Miss Solveig Pors, Miss Irma Klein, Miss Marie Louise Fugl Svendsen, Miss Kirsten Vestergaard, and Mrs. Rigmor Grønlund.

REFERENCES

- Aranow, H. (1952). In *Monographs in Medicine*, edited by W. B. Bean, Series 1, p. 179. Williams and Wilkins, Baltimore.
Euler, U. S. v. (1952). *Scand. J. clin. Lab. Invest.*, **4**, 254.
Evans, V. L. (1937). *J. Lab. clin. Med.*, **22**, 1117.
Hightower, N. C. (1955). *Med. Clin. N. Amer.*, **39**, 1101.
Lund, A. (1950). *Acta pharmacol. (Kbh.)*, **6**, 137.
— (1952). *Scand. J. clin. Lab. Invest.*, **4**, 263.
— (1956). Personal communication.
Manger, W. M., Flock, E. V., Berkson, J., Bollman, J. L., Roth, G. M., Baldes, E. J., and Jacobs, M. (1954). *Circulation*, **10**, 641.

TUBERCULOSIS IN MAN, DOG, AND CAT

BY

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Tuberculosis in the last few years has almost everywhere been associated with a falling death and notification rate and a reduced morbidity, so that now its eradication is regarded as practical policy. With this amelioration of the situation it has become reasonable to study aspects of the disease which would have been regarded as unimportant a decade ago, and it was therefore thought worth while to find out if tuberculosis in dogs and cats was making any contribution to the general pool of infection.

References to the incidence of tuberculosis in dogs followed quickly on the recognition of *Mycobacterium tuberculosis* by Koch in 1882. Faulenborg and Plum (1935) quote Frohner, in Berlin, as noting an incidence of 0.04% in 62,500 clinical examinations between 1886 and 1895, and Eber, in Dresden, who observed an incidence of 2.75% in 400 necropsies in 1893. In the United Kingdom it was not until 1929 that Smythe recorded a rate of 0.3 to 0.4% in dogs examined clinically at the out-patient department of the Royal Veterinary College of London. Lovell and White (1940) found tuberculosis in 4.6% of 543 canine necropsies. In Glasgow in 1955 an analysis of 175 consecutive dogs, submitted for pathological examination at the University of Glasgow Veterinary Hospital over a four-months period, showed generalized tuberculosis in all organs in eight, a rate of 4.5%.

Varying incidences of tuberculosis have also been noted in cats. Dobson (1930), in a study at the Veterinary College in Edinburgh, found evidence of the disease in 11 out of 505 cats examined at necropsy, and quoted rates varying from 2% to 11% as reported from Europe by Abel, Petit, Yost, and Nieberle. In the United Kingdom, Loveland White (1941) discovered an incidence of 3.6%.

Feldman (1955) has collated information regarding the type of mycobacterium responsible for 182 cases of tuberculosis occurring naturally in dogs in the British Isles, Europe, the Dutch East Indies, and U.S.A.—137 were of human type, 44 were bovine, and one was avian. In cats, of the 56 cases in the literature up to 1941, 52 were bovine in type. The remaining four were reported as human, although the data did not permit complete confirmation of this point. Jarrett (1955) has recorded a case of human type tuberculosis occurring in a cat, a finding confirmed by culture and virulence tests.

Investigation of the source of an animal's infection was undertaken by Lovell and White (1940), who reported a history of tuberculosis in the owner's family in 3 out of their 22 cases. Smythe (1929) noted 4 out of 20 cases; Stableforth (1929) 4 out of 16 cases; and Hjärre and Herlitz (1935) 6 out of 25 tuberculous animals. Herlitz (1939) reported two cases where the dogs almost certainly infected the humans, having been infected probably themselves by humans in the neighbourhood. In a further five cases the dogs probably infected the humans. The remainder of the group under consideration consisted of six dogs and two cats, and all these animals were probably infected by the humans. Thornton (1948) drew attention to the dangers of the sale of uncooked meat, sometimes from tuberculous carcasses, at pet-food shops.

Present Investigation

Glasgow appeared to be a city well suited to an inquiry into the possibility of interrelationship between tuberculosis in humans, dogs, and cats. Apart from the fact that probably at least 15 in every 100 of the population owned a dog or a cat, or both, the reservoir of tuberculosis in the city, and in the West of Scotland generally, was still substantial. It seemed possible that the household pets might have been overlooked as a factor contributing to the incidence. Examination of the humans whose pets had been destroyed for tuberculosis would explore the situation in respect of sick animals, and an extension of the traditional examination of the contacts of a known active human patient to include the household pets might secure information with regard to apparently healthy animals.

A scheme, called the Animal Health Scheme, was designed by the University of Glasgow Veterinary School and the Glasgow Mass Radiography Centre whereby the Veterinary Hospital supplied the names and addresses of the owners of animals found to have tuberculosis to the Mass Radiography Centre in order that these persons might be offered x-ray examinations; and the Mass Radiography Centre arranged to send the apparently healthy dogs and cats owned by patients with known active pulmonary disease to the Veterinary Hospital.

To implement the scheme a medico-veterinary group was formed under the auspices of the Veterinary School and the Department of Infectious Diseases of the University of Glasgow, comprising two veterinary clinicians, a veterinary pathologist, a veterinary radiologist, a medical pathologist and bacteriologist, and a chest physician. The Dog and Cat Home clinics in the city acted as receiving and clearing centres for the animals on their way to and from the Veterinary Hospital. The scope of the scheme was limited

in order not to exceed the ordinary working capacities of the laboratories and clinics taking part, and before it began the Director of Veterinary Education approached all the practising veterinary surgeons in the West of Scotland for their assent to free animal examinations.

Results

X-ray examinations were made of 34 humans who had had in their households one of the 14 dogs subsequently found at necropsy to have lesions characteristic, macroscopically and microscopically, of tuberculosis. The diagnoses were confirmed by culture or animal inoculation.

Although there were 60 humans in the households, only 34 (56.6%) would submit to examination. 22 (64.7%) of these examinees were radiologically normal, while the remaining 12 (35.2%) had radiographs which showed evidence of tuberculosis. The lesions of nine (26.4%) of these patients required attention, varying from hospital treatment to routine observation. Five of the nine cases were previously undiagnosed.

Table I shows the relationship between the number examined in each household owning a tuberculous dog and the number of human cases discovered. As the percentage of humans examined in each household rose there was a proportionate increase in the number of human cases discovered, until in the two households where all members were examined a human case of tuberculosis was found in each household.

TABLE I.—Results of Examining 14 Households Owning a Tuberculous Dog

Humans Examined	Households	No. of Human Cases Discovered	Total Occupants
None	1	None	5
Up to 50% ..	5	3	19
From 50 to 100% ..	6	4	25
100% ..	2	2	11

TABLE II.—Proximity of Human and Animal

Detail	Dog	Cat	Total	%
Animal lives in house ..	37	21	58	100
.. sleeps in same room ..	19	10	29	50
.. allowed on, or in, the bed ..	15	4	19	34
.. fed scraps from table ..	28	15	43	74
.. has own feeding-bowl ..	35	20	55	94
.. uses household plates ..	7	2	9	15
.. bowl washed in communal sink ..	34	19	53	91
.. washed in family sink or bath ..	25	—	25	67
.. "house-trained" ..	34	20	54	93
.. uses the streets ..	15	7	22	36
.. " " public parks ..	1	—	1	1
.. " " waste ground ..	9	—	9	15
.. " the garden ..	13	5	18	30
.. " sawdust box or coal bunker ..	6	2	8	13

Table II attempts to demonstrate the proximity of the relationship of human and pet, and points to the ease with which mutual infection might occur.

A reverse approach to the problem was made—namely, an attempt to examine 42 animals owned by 37 sputum-positive patients who were undergoing treatment for active tuberculous lesions. Of the animals at risk only 20 dogs and 15 cats were obtained for examination at the Veterinary Hospital. Each examination consisted of a general check, using normal clinical methods, supplemented by dorso-ventral and lateral x-ray films of the chest, rectal and throat swabs, and, in most cases, catheter specimens of urine, for bacteriological investigation, and tuberculin testing by either the subcutaneous or the intravenous temperature elevation method. Two dogs and two cats, apparently normal in every respect, gave unexpected and unexplained positive cultures from swabs of their alimentary tracts. The four animals were obtained from their owners for destruction when the results of the culture became known. Before the two

cats were humanely destroyed several rectal and throat swabs were taken in an unsuccessful attempt to repeat the recovery of *M. tuberculosis*.

Table III shows the bacteriological findings. All specimens were inoculated on to Löwenstein's medium, and, to

TABLE III.—*Abnormal Findings in Bacteriology*

Case No.	Nature of Specimen	Morphology of Culture	Guinea-pig	Rabbit
Dog MR14 ..	Throat swab	Human	Positive	—
MR15A ..	" "	" "	" "	—
Cat MR26 ..	" and rectal swabs	" "	" "	Human
MR30 ..	Rectal swab	" "	" "	" "

provide for the inhibition experienced with certain bovine strains on that medium, parallel inoculations were made on to Dorset egg medium. Quick-growing saprophytes are common contaminants of faecal samples, especially in the cat, and, to obviate this possible error, cultures were examined at weekly intervals and early growths discarded. Slow-growing saprophytes were excluded by awaiting the result of secondary culture before accepting a positive finding. Direct examination was used in confirmation at this point.

Morphologically both dog (MR14 and MR15A) and cat (MR26 and MR30) secondary cultures appeared human in type. The growths were all eugonic, warty, and with varying degrees of yellow pigmentation. The virulence tests in respect of all four animals were carried out in guinea-pigs and the resultant lesions were typical of the human strain. Rabbit inoculation of the organism obtained from the cats (MR26 and MR30), using 10 mg. of moist culture subcutaneously, produced the localized lesion associated with the human type when the rabbits were killed at 12 weeks. Rabbits were not inoculated with the organism obtained from the two dogs.

Table IV shows the corresponding necropsy findings. Histological examination was not possible in dog MR14

TABLE IV.—*Abnormal Findings at Necropsy*

Case No.	Macroscopic Findings	Microscopical Findings	Z.N. Staining	Bacteriology
Dog MR14 ..	—	—	—	—
MR15A ..	Prescapular gland	" Reactive "	No "acid-fast"	—
Cat MR26 ..	Mesenteric	" "	" "	Negative
MR30 ..	Submandibulars and mesenteric glands	" "	" "	" "

because of decomposition. The only lesion found in dog MR15A was an enlarged prescapular gland. Cat MR26 had an enlarged mesenteric gland; and in cat MR30 both the submandibular and mesenteric glands were enlarged. None of the cat glands yielded bacilli, either on direct examination with Ziehl-Neelsen staining or on subsequent culture. The gland from dog MR15A was examined for bacilli only with Ziehl-Neelsen staining and none were seen. Microscopical section did not reveal a single typical tuberculous follicle. The glands showed reactive changes—namely, marked congestion with periadenitis. No germinal centres were apparent and the cells of the sinuses showed proliferation. The small vessels were "cuffed" here and there by lymphocytes. An excess of lymphocytes in each field seemed suggestive of a chronic rather than an acute inflammatory change. Giant cells of the Langhans type do not usually occur in dogs and cats.

Discussion

The results of this preliminary survey fall naturally into two parts, the first being concerned with the examination of the humans in contact with the tuberculous animals; and the second being concerned with the investigation of the apparently healthy animals in contact with the sputum-positive humans.

Humans in Contact with Tuberculous Animals

The first part of the results was based on the 14 tuberculous dogs, and here the examination of just over half of the human contacts produced nine patients who had tuberculous lesions in varying need of attention. Only three of these patients came into the category of new active adult reinfection type pulmonary tuberculosis requiring early anti-tuberculous treatment, but they represented an active tuberculosis rate of 8.82%. In 1954 the Mass Radiography Service of the Western Regional Hospital Board examined 43,150 persons of all ages resident in Glasgow, and Miller (1954) reported the incidence of new active adult reinfection type pulmonary tuberculosis as 0.72%. While it is unwise to make any comparison of this figure with the equivalent of 8.82% in the present small sample of persons in contact with tuberculous dogs, the difference is so large as to justify further study of the problem.

Even at this stage of the investigation there is already no doubt that a veterinary diagnosis of tuberculosis calls for early and complete examination of the humans in the animal's household. The extra effort required to cover this small group would be negligible in terms of the probable resulting yield of new cases of active tuberculosis or, perhaps more important, latent exacerbations of known "inactive" lesions. Until the extent of the problem is ascertained it is premature to consider the related question of a legal requirement of notification.

Any further estimate of the incidence of tuberculosis in the dog and cat will depend on the general awareness of the distribution of the disease in animals, based on the work that has been carried out in the West of Scotland; and it will also be important for those concerned to realize the contribution that exact veterinary diagnoses can make to this particular problem. Unfortunately, the disease produces few characteristic early symptoms or signs in either dog or cat, and may not be recognized until post-mortem examination. Knowledge of the extent of the problem might encourage veterinary surgeons and others to have dogs examined at necropsy where indefinite illness had preceded death.

The volume of material for diagnosis could be increased further if the medical side, and the animal owners, were prepared to consult a veterinary surgeon more readily over household pets.

In dogs, most cases of tuberculosis occur in mature adults, but the disease has been observed in animals as young as 9 months. The history is not always helpful. Owners may have observed some loss of appetite, dullness, loss of weight, coughing, or emesis, but frequently in the early stages little deviation from normal will have been noticed. Breathlessness or rapid breathing of apparently sudden onset may be the first sign of importance seen by owners.

Many affected dogs are in reasonably good condition, with no emaciation. Most cases show clinical signs consistent with hydrothorax or ascites. Some have palpable enlargement of liver, spleen, kidney, or mesenteric nodes, while a few show lymphadenitis of superficial lymph nodes which may be accompanied by ulceration of the overlying skin. The nodes usually involved are those of the head and neck, but ulceration over the popliteal node has been encountered. Elevation of the temperature over the normal level, $101.5 \pm 1^\circ \text{F.}$ ($38.6 \pm 0.55^\circ \text{C.}$), frequently occurs. Haematology shows no constant characteristic change, but leucocytosis has been a feature of a few cases.

Tuberculosis in the cat is usually associated with infection of the liver and mesenteric nodes, often with an ascites, but has become a rare occurrence in the West of Scotland within recent years. This reduced incidence has probably been brought about by the eradication of tuberculosis in cattle and the pasteurization of milk.

In the 14 tuberculous dogs under consideration the average length of time the animal was observed to be markedly ill was three months. One animal which died of tuberculous bronchopneumonia had been under treatment for more than

a year before the diagnosis was made at necropsy. Another animal, whose symptoms began two years previously, died of bilateral pulmonary tuberculosis with cavitation associated with liver lesions. When Griffith (1911) was conducting the modification experiments on the bovine type of *M. tuberculosis* for the Royal Commission on Tuberculosis, he fed 19 dogs an average dose of 62 mg. of culture. These animals all had to be killed after an average period of 206 days despite the fact that at necropsy all were found to have lesions of varying extent. Gunn *et al.* (1943) report similar findings. One of their dogs was found to have an active lesion more than three years after artificial infection.

From the foregoing it can be seen that little reliance can be placed on the quick death of the animal as a convenient form of natural self-limitation of a source of infection.

Animals in Contact with Sputum-positive Humans

The second part of the results was based on the investigation of the 20 dogs and 15 cats living in contact with sputum-positive humans, and here the abnormal findings in the two dogs (MR14 and MR15A) and the two cats (MR26 and MR30) must raise the question of the advisability of allowing dogs and cats to live in tuberculous households.

The possibility must be considered that the bacilli recovered had been ingested and that the positive cultures were simply an indication of their transit through the bowel. Floyd and Page (1943) found that *M. tuberculosis* could survive exposure to the gastric juices of dogs for periods of one to twelve hours without the loss of pathogenicity noted in guinea-pigs after longer periods. Kuwabara (1938), injecting 5 mg. of human-type bacilli intravenously into cats, noted a few bacilli in the spleen, liver, and lungs two months after the injection, but no bacilli at three months. There were no associated histological changes. It would thus seem that bacilli can be present for at least eight weeks in animals with natural resistance without causing lesions. In the present series, both dogs and one of the cats, MR30, had been separated from the household source of infection for more than three months at the time of examination.

It might be argued that these findings represented an early stage in the disease in dogs and cats, a stage about which there is little, if any, factual knowledge.

At present it is not considered advisable to speculate on the exact significance of these findings, but there is enough evidence to warrant continuation of the survey in this area, and to draw the attention of others to this interesting problem. The correct interpretation, indeed substantiation, must await the outcome of further study.

The combined results indicate the existence of a small field in which full investigation may produce findings having a restricted application in the epidemiology of tuberculosis.

Summary

An account is given of an investigation into the inter-relationship of tuberculosis between humans and dogs and cats.

The human contacts of 14 tuberculous dogs underwent x-ray examination and 9 significant cases of tuberculosis were found among them.

The dogs and cats owned by 37 patients with active tuberculosis were examined, *M. tuberculosis* being recovered from swabs of the alimentary tracts of two dogs and two cats.

Further investigation of all aspects of the subject would be materially assisted by a wider appreciation of the possibility of the occurrence of tuberculosis in dogs and cats.

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REFERENCES

- Dobson, N. (1930). *J. comp. Path.*, **43**, 310.
 Faulenborg, G., and Plum, N. (1935). *Maanedsskr., Drylæg.*, **47**, 593.
 Feldman, W. H. (1955). In T. G. Hull's *Diseases Transmitted from Animals to Man*. Thomas, Springfield, Ill.
 Floyd, C., and Page, C. G. (1943). *Amer. Rev. Tuberc.*, **48**, 174.
 Griffith, F. (1911). *Final Report of the Royal Commission Appointed to Inquire Into the Relations of Human and Animal Tuberculosis*, **4**, 151. London.
 Gunn, F. D., Mills, M. A., Shepard, G. C., and Barth, E. E. (1943). *Amer. Rev. Tuberc.*, **47**, 78.
 Herlitz, C. W. (1939). *Acta tuberc. scand.*, **13**, 125.
 Hjärre, A., and Herlitz, C. W. (1935). *Acta paediat. (Stockh.)*, Suppt. 1, 141.
 Jarrett, W. F. H. (1955). Hospital Pathology Unit, University of Glasgow. Personal communication.
 Kuwabara, T. (1938). *Kitasato Arch. exp. Med.*, **15**, 318.
 Lovell, R., and White, E. G. (1940). *Brit. J. Tuberc.*, **34**, 117.
 ——— (1941). *Ibid.*, **35**, 28.
 Miller, T. J. R. (1954). Glasgow Mass Miniature Radiography Annual Report.
 Smythe, A. R. (1929). *Vet. Nat. Rec.*, **9**, 421.
 Stableforth, A. W. (1929). *J. comp. Path.*, **42**, 163.
 Thornton, H. (1948). 66th Ann. Congr. Nat. Vet. Med. Ass. of Gt. Britain and Ireland.

CORRELATION OF HUMAN AND ANIMAL RINGWORM IN WEST OF SCOTLAND*

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As a result of reports in the medical and veterinary press of the existence of an animal reservoir for many human ringworm infections a committee on human and animal dermatomycoses was formed in Glasgow in November, 1954. This report by a subcommittee appointed to investigate cases of human ringworm suspected to be of animal origin covers the first two years of the work. During the first year the survey area consisted of South and West Glasgow, the county of Ayr, and parts of the counties of Dunbarton, Renfrew, and Stirling. After a year this area was extended to include the whole of Glasgow and the South-west of Scotland.

Method

At first dermatologists who diagnosed ringworm of possible animal origin submitted a specimen for identification and asked the patient to have any suspected animal

*A report to the Committee on Human and Animal Dermatomycoses. Members of the Committee: Professor W. L. Weipers (chairman), Dr. R. W. Carslaw, Dr. T. Cochrane, Professor J. W. Emslie, Dr. A. Girdwood Fergusson, Mr. J. C. Gentles, Dr. W. A. Greig, Mr. I. M. Lauder, Mr. J. G. O'Sullivan, Mr. A. Pottie, Dr. J. F. Ferguson Smith, Dr. Mary Smith, Dr. J. Sommerville, Mr. A. Thomson, and Mr. A. L. Wilson.