release of prolactin from the anterior pituitary gland. Further clinical and experimental work is necessary to elucidate the role of oxytocin in this respect.

Summary

Oxytocin was regularly administered by means of a nasal spray to primiparae from the second day of the puerperium. No serious side-effects were noted. The use of the spray resulted in the easier establishment of breast-feeding and in an improvement of milk production. No significant reduction in the incidence of early breast engorgement was obtained. Nasal oxytocin has a place in the management of lactation and breast-feeding, but further work is necessary to define its usefulness more exactly and to elucidate the underlying physiological mechanisms.

I thank the midwives of Charing Cross Hospital for their invaluable co-operation, and Professor Norman Morris for his encouragement and for allowing me to carry out this trial on his patients. I am grateful to Dr. H. Holgate, of Sandoz Products Ltd., for providing me with the nasal sprays containing "syntocinon" and the placebo.

REFERENCES

- Baumgarten, K., and Hofhansl, W. (1959). *Geburtsh. u. Frauenheilk.*, **19**, 913.
 — and Watzek, I. (1959). *Wien. klin. Wschr.*, **71**, 139.
 Beller, F. K., Krumholz, K. H., and Zeininger, K. (1958). *Acta endocr. (Kbh.)*, **29**, 1.
 Benson, G. K., and Folley, S. J. (1956a). *Nature (Lond.)*, **177**, 700.
 — (1956b). *J. Endocr.*, **14**, xl.
 — (1957). *Ibid.*, **16**, 189.
 — and Tindal, J. S. (1960). *Ibid.*, **20**, 106.
 Berde, B. (1959). *Recent Progress in Oxytocin Research*. Thomas, Springfield, Illinois.
 — and Cerletti, A. (1957). *Gynaecologia (Basel)*, **144**, 275.
 — (1960). *Acta endocr. (Kbh.)*, **34**, 543.
 Cross, B. A. (1955). *Brit. med. Bull.*, **11**, 151.
 — (1957). *Vet. Rec.*, **69**, 1216.
 Donaldson, M. (1921). *Proc. roy. Soc. Med.*, **14** (Sect. Therap.), 19.
 Douglas, R. G., Kramer, E. E., and Bonsnes, R. W. (1957). *Amer. J. Obstet. Gynec.*, **73**, 1206.
 Hendricks, C. H., and Gabel, R. A. (1960). *Ibid.*, **79**, 780.
 Hofbauer, J., Hoerner, J. K., and Oliver, K. S. (1927). *Ibid.*, **14**, 137.
 Hollenbach, C. (1959). *Zbl. Gynäk.*, **81**, 1980.
 Newton, M., and Egli, G. E. (1958). *Amer. J. Obstet. Gynec.*, **76**, 103.
 — and Newton, N. R. (1948). *J. Pediat.*, **33**, 698.
 — (1951). *Amer. J. Obstet. Gynec.*, **61**, 664.
 Nickerson, K., Bonsnes, R. W., Douglas, R. G., Condliffe, P., and du Vigneaud, V. (1954). *Ibid.*, **67**, 1028.
 Ōta, K., and Yokoyama, A. (1958). *Nature (Lond.)*, **182**, 1509.
 Petersen, W. E. (1944). *Physiol. Rev.*, **24**, 340.
 Stewart, R. H., and Nelson, R. N. (1959). *Obstet. and Gynec.*, **13**, 204.
 du Vigneaud, V., Ressler, C., Swan, J. M., Roberts, C. W., Katsoyannis, P. G., and Gordon, S. (1953). *J. Amer. chem. Soc.*, **75**, 4879.
 Wenner, R. (1959). *Schweiz. med. Wschr.*, **89**, 441.

A joint meeting of the two main committees of the 14th World Health Assembly has received a report which states that, out of 1,336m. people in currently or formerly malarious areas, 298m., or 22.3%, are now living in areas where malaria has been eradicated, while over 612m., 45.9%, are covered by malaria eradication programmes. Preliminary malaria eradication activities (pre-eradication surveys and pilot projects) are now under way in areas containing a population of 170m., 12.7%. A population of 255m., 19.1%, is still living in areas where no eradication scheme has been planned. The report points out that a number of malaria eradication programmes have not progressed according to schedule, for technical, operational or administrative reasons, and "experience has shown that, while it is relatively easy to find solutions to technical and operational shortcomings, it is much more difficult to correct administrative imperfections."

PREVALENCE AND NATURAL HISTORY OF ASTHMA IN SCHOOLCHILDREN

BY

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Information regarding the prevalence of asthma in children is not extensive. Logan and Cushion (1958) reported that in a number of general practices in England and Wales, 1.23% of boys and 0.64% of girls under 15 years were known to have asthma. These figures are likely to be below the true prevalence of the condition, since many children receive no treatment from the family doctor either because the condition is mild or because remedies are obtained elsewhere. In Bergen, Eilertsen (1954) found a prevalence of 1.77% in children of 7, and in Stockholm, Kraepelin (1954) found an overall prevalence in children of 7 to 14 of 1.37%, which fell from 1.61% in those aged 7 to 0.87% in those aged 14. Neither of the Scandinavian authors separated the sexes.

An asthma clinic for schoolchildren within the school health service was started in Birmingham in 1953, and in 1956 an attempt was begun to study the prevalence of asthma in schoolchildren in the city. The investigation was undertaken with the assistance of the school medical officers and was carried out during the 12 months from September, 1956, to October, 1957.

Method of Investigation

Schoolchildren in Birmingham are examined at three routine medical inspections. The first is normally during the first year at school when they are 5 or 6, the second is five years later when they are 10 or 11, and the final inspection is just before they leave school and they are then 13 to 15. The school medical officers were asked to identify and record all children with asthma, as defined in the protocol, found at these medical inspections and to make inquiries regarding asthma in all children who, because of sickness or for any other reason, were not at the medical inspection but were on the nominal roll of those due for examination at that time. Care was also taken to find out which children in special schools, residential and non-residential, suffered from asthma among those in the age-groups used for medical inspections. It was felt necessary to make specific inquiry in the case of each child regarding the presence of asthma. As already mentioned, the condition may give rise to no serious distress in children mildly affected and to no loss of school time.

For the purpose of the investigation "asthma" was defined simply as recurrent wheezing and dyspnoea not known to be of extrapulmonary origin. At first sight this definition might appear too simple, but from experience it was known that a mistake in a positive diagnosis of asthma in children of school age is extremely rare. In over 500 cases referred to the asthma clinic by a large number of practitioners none had been mistaken. Such confidence in the diagnosis would not be possible in younger children or in adults. The diagnosis was checked in the first 173 cases reported in

this survey, but in no case was there any doubt that it was correct, so the rest were accepted.

It should be noted that the fact that the diagnosis was never found to be in error suggests that some very mild cases might have been missed. There was some variation in the numbers reported by individual medical officers, but, except in one case where the doctor became seriously ill during the period, the variation was not excessive. This might be due to a variation in zeal, but there is also a variation in occurrence as between different districts in the city. Maunsell (1956) plotted her cases on a map of London and suggested that they lived mainly where the soil was damp and where rivers or canals ran underground. By plotting the survey cases living at home and attending ordinary schools on a map of Birmingham the distribution was found to be very similar to that of 710 consecutive cases referred to the asthma clinic by their family doctor (Fig. 1).

FIG. 1.—Diagrams showing distribution of cases of asthma in Birmingham schoolchildren and that of consecutive cases referred to the asthma clinic.

Results

The results of the survey are shown in Table I. The overall prevalence was 1.76%, which is in keeping with that reported from Bergen and from Stockholm. The

TABLE I.—Prevalence of Asthma in Birmingham Schoolchildren 1956-7

Age in Years	Boys			Girls			Both Sexes		
	Total No.	With Asthma		Total	With Asthma		Total No.	With Asthma	
		No.	%		No.	%		No.	%
5 and 6	8,785	227	2.58	7,993	82	1.02	16,778	309	1.84
10 and 11	8,635	202	2.33	7,924	101	1.29	16,559	303	1.83
13, 14, 15	7,719	152	1.96	8,217	100	1.21	15,936	252	1.58
Total	25,139	581	2.31	24,134	283	1.17	49,273	864	1.76

prevalence in boys fell steeply from 2.58% in the youngest group to 1.96% in the oldest group, a difference which is statistically significant. At all ages there was a significant difference between the prevalence in boys and that in girls, which was much lower and did not vary greatly as between the age-groups.

Discussion

Williams (1959) found the figures for adult populations from most parts of the world to be in rough agreement and the most generally accepted figure appeared to be 0.9% for both sexes. Asthma caused 0.9% of rejections for the armed Forces at the age of 18 years in the United Kingdom and rather less in the United States. If we accept that in early adult life there is a prevalence in both sexes of 0.9% we can extend the impression gained so far of the natural history of the condition. This is illustrated in Fig. 2.

FIG. 2.—Prevalence of asthma in relation to age and sex.

The age at onset of asthma does not seem to differ greatly in boys and girls. Table II shows the age at onset of 535 consecutive patients referred to the asthma clinic. It seems unlikely that the age at onset of the disease has anything to do with the sex difference.

TABLE II.—Age at Onset of Asthma

Age	Boys		Girls	
	No.	% Age	No.	% Age
<1	95	24.49	28	19.06
1-2	55	14.18	15	10.20
2-3	61	15.72	31	21.10
3-4	51	13.15	19	12.92
4-5	33	8.50	17	11.56
5-6	28	7.21	17	11.56
6+	65	16.75	20	13.60
All	388	100	147	100

A difference in severity might account for the sex difference. Among the cases seen at the asthma clinic it was possible to differentiate three groups according to severity. In about 10% of cases the asthma was so severe that the children managed to attend school for only short periods, and these children generally suffered educationally. In about 30% the condition was so mild that they hardly ever lost time from school because of asthma. The remainder lost time but managed to maintain their places in school with other

TABLE III.—205 Clinic Cases in the Three Survey Age-groups

	Age 5-6			Age 10-11			Age 13-15			Total		
	All Cases	Mild Cases		All Cases	Mild Cases		All Cases	Mild Cases		All Cases	Mild Cases	
		No.	%		No.	%		No.	%		No.	%
Boys	59	18	30.5	53	18	33.9	31	8	25.8	143	44	30.8
Girls	25	9	36.0	26	11	42.3	11	5	45.4	62	25	41.9
Total	84	27	32.1	79	29	36.7	42	13	30.9	205	69	33.66

children of similar age and intelligence. The mild group was easily defined, and from cases attending the clinic, grouped according to the age-groups used for medical inspections, the mild cases were selected. Table III shows these figures.

The percentage of mild cases in each of the three age-groups does not differ greatly as between the sexes, but on the whole it is the girls rather than the boys who seem to have the higher proportion of mild cases. There is nothing here to suggest that severity has a marked bearing on the trend shown and that boys tend to recover because they have milder asthma than girls.

The influence of environment might affect the course of the disease and account for the sex difference. In this country, however, we treat boys and girls very much the same up to the age of 15, and it is difficult to accept that a difference in environment could account for it. It is strange that the sex difference should be slowly abolished as puberty occurs and adult life approaches. If it were due to a hormonal difference the opposite would be expected. It is too difficult and uncertain to attempt to estimate hormonal activity in large numbers of children with the techniques at present available. There must, however, be some explanation for this clearly defined sex difference, which is in keeping with the experience of physicians such as Bray (1937) in this country and Dees (1957) in the United States, who reported that two to three boys attended their clinics for every girl. The phenomenon may provide a clue to some unknown factor in the aetiology of asthma even if we do not know where it leads at present.

Summary

An investigation of the prevalence of asthma among schoolchildren in Birmingham revealed an overall prevalence of 1.76%, which is in keeping with Scandinavian reports. There was a striking sex difference in that asthma was much more prevalent in boys than in girls. This was greatest in the youngest age-group and least in the oldest age-group owing to a falling prevalence in boys while that in girls remained almost stationary. There is evidence that the fall in prevalence in boys continues, so that in early adult life the sex difference is abolished. Although the explanation of the sex difference in the natural history of asthma cannot at present be explained it is thought to provide a possible clue to some important factor in the aetiology which has yet to be discovered.

This survey could not have been undertaken without the help of Dr. H. M. Cohen, the Principal Medical Officer for Schools in Birmingham, and his staff. I am indebted to Miss C. Butt, the school health visitor attached to the asthma clinic, for her help; to Mrs. D. Bailey for secretarial assistance; and to Dr. D. A. Williams, of Cardiff, and Dr. V. H. Springett, of Birmingham, for their encouragement and criticism.

REFERENCES

- Bray, G. W. (1937). *Recent Advances in Allergy*. Churchill, London.
 Dees, S. C. (1957). *J. Dis. Child.*, **93**, 228.
 Eilertsen, E. (1954). *T. norske Lægeforen.*, **74**, 322.
 Kraepelin, S. (1954). *Acta paediat. (Uppsala)*, **43**, Suppl. 100, p. 149.
 Logan, W. P. D., and Cushion, A. A. (1958). *Morbidity Statistics from General Practice*, **1**, 33. General Register Office: *Studies on Medical and Population Subjects*, No. 14. H.M.S.O., London.
 Maunsell, K. (1956). In *The Therapy of Bronchial Asthma*, edited by W. J. Quarles van Ufford. Kroese, Leyden.
 Williams, D. A. (1959). In *International Textbook of Allergy*, edited by J. M. Jamar. Blackwell, Oxford.

NEW DATA ON THE PATHOLOGY OF "TRUE SCLERODERMA KIDNEY"

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[WITH SPECIAL PLATE]

Scleroderma, or progressive systemic sclerosis, is known to produce in certain rare cases characteristic morphological changes in the kidneys, accompanied by symptoms of rapidly developing and mostly fatal renal insufficiency.

The morphological pattern—in the proximal part of the interlobular arteries, mucoid intimal thickening with gross reduction in lumen; in the distal part, fibrinoid necrosis involving also the arterioles and a more or less pronounced ischaemic necrosis in the renal cortex—is diagnostically characteristic of scleroderma and constitutes what has been called "true scleroderma kidney" (Calvert and Owen, 1956).

Material and Methods

The discrepancy between the marked morphological changes and the virtual absence of clinical symptoms in the early stages led us to investigate with more sensitive methods the renal function of 25 patients suffering from scleroderma of varying severity. On routine clinical examination these patients showed no sign of renal disorder. We have, however, proved that in 80% of the cases the *para*-aminohippurate (P.A.H.) clearance (indicating effective renal plasma flow—R.P.F.) was reduced, while endogenous creatinine clearance (C_{Cr} , a measure of glomerular filtration) remained normal and the filtration fraction (F.F.) increased. On the basis of the above we assumed that reduced R.P.F. indicates sclerodermal renal involvement much earlier than do ordinary clinical tests (Urai *et al.*, 1958). Rodnan *et al.* (1957) assume renal vascular spasms in the pathogenesis of sclerodermal renal involvement and believe them to be similar to Raynaud's phenomenon.

There can thus be no doubt that the vascular structure of the affected sclerodermal kidney undergoes considerable changes. The histological picture, however, offers information only as to the character of these vascular changes. Morphological examination of the cases reported in the literature and of those in our own experience reveals a more or less severe lesion of all medium and small arteries, while a considerable part of the glomeruli seems morphologically intact.

As histological study does not provide adequate information on the vascular structure of the whole kidney, we sought another method of investigating this problem. This was supplied by Munkácsi's new corrosion preparation method (Munkácsi, 1957), in which a polyvinyl chloride solution is used. This method was utilized by Gömöri and co-workers (1960) to study the circulation of the hypoxic kidney. In their report they give a critical discussion of the technique and application of the method.