measured to a free diet has often been made without deterioration in health or vigour.

2. It may be argued that the patients believed to be eating an uncontrolled diet were in fact unconsciously eating a diet which maintained a fairly accurate carbohydrate balance. This is not so.

3. It may be argued that the insulin requirements of my patients are greater than they would be on a measured diet. This may be so, but, as none of my patients need more than 60 units a day and the majority take between 10 and 40, the point is not very important. (This point would be important if it could be shown that cases of established diabetes under control gradually progressed towards complete cure. This question has already been dealt with in the paragraph on acute diabetes.)

4. It may be argued that in 20 years' time the fate of the surviving uncontrolled diabetics may be worse in respect of late complications than that of the controlled group. That is certainly possible. It is no answer for me to claim (as I do) that over 10 years' observation reveals no evidence of premature arteriosclerosis, for it may be that in the development of late diabetic complications there is a clinically silent stage analogous to that in the development of syphilitic aortitis.

If it were not for this objection I would have no hesitation in proclaiming that the maintenance of a carbohydrate balance was an unnecessary adjunct to the treatment of diabetes. But time will settle the question. Twenty years have already elapsed since the isolation of insulin, and soon many young diabetics treated in the first decade after its introduction to therapeutics will be reaching middle age. It will then be possible to judge between the rebellious and the docile, and for that very reason I wish to repeat my plea for a continued careful observation of the former class.

Summary and Conclusions

A plea is made for the study of the group of severe diabetic patients who refuse to follow any regulated diet but will take insulin. Prolonged study of these uncontrolled but otherwise healthy diabetics will show whether their persistent hyperglycaemia favours the onset of arteriosclerotic or degenerative complications. Observations during a period of over ten years yield no evidence that it does so.

Study of this group has convinced me that regulation of the diet with a view to maintaining a normal blood sugar is unnecessary; this opinion is based solely on the sustained good health of patients on uncontrolled diet. The patient must take enough insulin to prevent ketosis, and arrange his meals so as to avoid hypoglycaemia. If he does this his condition is not improved by maintaining a carbohydrate balance. The mild diabetic who does not require insulin does not benefit (unless obese) from strict dietetic control.

In diabetes of very recent origin it should, however, be assumed that accurate dietetic control will favour whatever chance of complete cure may exist.

Normal (uncontrolled) diet in the child is not associated with frequent attacks of coma. Outbreaks of gluttony in the diabetic child are dangerous and lead to coma, not because they produce hyperglycaemia but because they are followed by vomiting.

In the treatment of coma insulin and intravenous saline are the two essentials. If at any stage the onset of hypoglycaemia is feared, then glucose can be administered freely and without blood-sugar control.

Two grants of £1,000 each have been made by King Edward's Hospital Fund for London to assist in the establishment of two group preliminary training schools for nurses—one at Hampstead to serve a North London group of hospitals, and the other at Blackheath to serve a group south of the river. Additional financial help will be given during the next three years should such further help be necessary. The King's Fund is prepared to consider similar schemes by other groups of hospitals in its area and to make grants up to a total of £5,000 for this year, with assurance of continued help for three years in case of need. Further particulars may be obtained from the Nursing Recruitment Centre, 21, Cavendish Square, W.1.

TREATMENT OF ASTHMA BY NICOTINIC ACID

BY

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Maisel and Somkin (1942) have recently published a preliminary report on the treatment of the asthmatic paroxysm with nicotinic acid. Relief of the paroxysm was obtained in 21 out of 30 cases treated with the drug, either by intravenous injection (16 out of 21 patients relieved) or orally (5 out of 9 patients relieved). Eighteen patients who had received intravenous therapy were subsequently given the drug orally, and 11 of these cases were definitely improved. Neuwahl (1942), who had obtained satisfactory results with the drug in angina pectoris, also used it in 7 cases of asthma in order to note its action on smooth muscle. Of his patients 4 were improved and 3 were made worse. It is not known whether the drug acts by relieving bronchospasm or by affecting the pulmonary vessels, or whether it is converted into or liberates another substance which is the physiologically active agent. Neuwahl suggested a pharmacological similarity to histamine; but, as Maisel points out, this does not appear to explain its action in asthma.

For some months before either of these reports came to my notice I had been treating asthma with nicotinic acid, both during the paroxysm and between the attacks. It was hoped that its action in dilating blood vessels might be accompanied by a similar action on the bronchioles.

Treatment of the Paroxysm

Of 19 cases which received treatment during the paroxysm 7 had had slight or no relief from adrenaline or had relapsed. Most of the attacks treated were severe ones. The possibility was considered that improvement following the treatment might be due to psychological influences associated with coming into hospital and receiving injections, and an attempt was made to control this factor by giving an intravenous injection of sterile water, preferably before nicotinic acid, to 12 of the cases. In some instances a control injection was given in a later attack. The effect of the control injection was then compared with that produced by nicotinic acid. Slight transitory improvement was noted in 7 cases after the use of sterile water. Two patients not included in this series had their attacks completely relieved though they did not receive nicotinic acid. In order to be sure of a rapid action, nicotinic acid was as a rule given intravenously in doses of 50 mg. (half those used by Maisel). One ampoule was dissolved in 10 c.cm. of sterile water and the injection was given very slowly. Two cases received intramuscular injections, and in one of these the dose employed was 100 mg. One case received 50 mg. intravenously and 50 mg. intramuscularly. A second intravenous dose was given to many of the patients during a relapse or a succeeding attack, sometimes within a few hours of the first dose. Six cases, 4 of which had already received nicotinic acid intravenously, were given the drug orally in doses of 50 or 100 mg. (1 or 2 tablets) during a paroxysm.

Results.—The effect of nicotinic acid in 16 of these patients was to produce definite improvement in at least one of the attacks for which the drug was given. In 8 cases the relief was practically complete; in the other 8 there was a residual wheeze for many hours. In all cases adventitious sounds persisted in the lungs—a fact noted by Maisel. Improvement usually began to manifest itself within a few minutes of the injection, the patient falling asleep in many instances and awaking the next morning much relieved. The duration of relief varied considerably and did not always appear to be dependent upon further doses, parenteral or oral. The period of relief was sometimes as short as half an hour, but in other cases there was no further attack for some days, even when the attacks had been frequent before admission. On the whole a relief of several hours was obtained. Further injections sometimes repeated the improvement resulting from the first one, but in 5 cases later injections resulted in little or no

relief. This suggests that in some instances the efficacy of nicotinic acid is affected by repeated use, contrary to what is stated by Maisel. It is of course possible that the smaller dosage employed by me might in part explain this difference. Two cases were not improved at all by nicotinic acid. Neuwahl refers to severe exacerbations of asthma which occurred in 3 of his cases. This effect was also seen in 2 cases of this group. One case developed a status asthmaticus 24 hours after an intravenous injection which had given considerable relief and had been followed 20 hours later by an oral dose.

Flushing, tingling, and a feeling of heat appeared within a few minutes of the administration of nicotinic acid, and these symptoms were often pronounced and preceded improvement of the asthmatic attack. Occasionally headache, giddiness, depression, palpitations, and increased tightness of the chest were noted. As Maisel observed, improvement sometimes follows a bout of coughing.

Treatment between the Attacks

In 30 cases, many of which had severe and frequent paroxysms not controlled by ephedrine or stramonium, nicotinic acid treatment was given between the attacks for periods varying from a few weeks to several months. Of these patients 11 had received treatment previously during an acute paroxysm. The drug was given orally generally in doses of 50 mg. two or three times daily. Some cases received 100 mg., particularly on retiring. Children usually received half these doses. It should be noted that Maisel employed oral doses of 200 mg. 3 times daily before meals and once on retiring, but no mention is made over what period such dosage was given.

Results.—The results from this treatment were on the whole favourable. Sixteen cases showed definite improvement as compared with their recent condition before beginning nicotinic acid. This improvement was characterized by a definite reduction in either the frequency or the severity of the attacks and often by both these factors. The period of improvement varied considerably, from a few weeks to several months. Ten other cases showed slight improvement, assessed on the basis of a reduction in the frequency or severity of the attacks or upon the fact that relapse occurred within two weeks of starting treatment. In 4 cases no material change resulted from nicotinic acid therapy. In 9 cases courses of nicotinic acid were alternated with courses of citric acid tablets, the latter acting as a control. The patients were not informed that any change over to different tablets had been made.* In 6 of these cases the effect of nicotinic acid was definitely superior to that produced by the control tablets, the patients generally showing an early relapse when receiving the latter. Two cases, however, were maintained on the control tablets for many months with infrequent attacks. Six cases relapsed rapidly when they were taken off nicotinic acid and received no treatment.

Flushing and the other symptoms produced by nicotinic acid were often present in this group, and two patients abandoned their treatment because of unpleasant effects. It should be noted that several patients in whom the effect of nicotinic acid had worn off responded subsequently to adrenaline and ephedrine, but some were refractory to all treatment.

Conclusions

These results on the whole confirm those of Maisel and Somkin that nicotinic acid appears to be of value in the treatment of the asthmatic paroxysm. The drug when given over long periods also appears to be useful in diminishing the frequency and severity of the attacks. It is necessary to be cautious, however, in assessing the value of any treatment in this condition with such irregular incidence of attacks and susceptibility to psychological influence. Improvement after control injections and tablets illustrates this point. Nevertheless, in the majority of cases in which control therapy was employed, nicotinic acid proved much superior to the control measures in relieving the paroxysms and reducing their frequency. In view of the larger doses given by Maisel and Somkin, it would certainly seem an advantage to increase the dosage above 100 to 200 mg. daily in those cases which do not improve. Yet, although the drug appears to be non-toxic,

* The absence of flushing, etc., with citric acid did not appear to be regarded by the patients as indicating a change of treatment.

it can on occasion produce unpleasant symptoms, and the possibility of an exacerbation of the asthma (not noted by Maisel) must be borne in mind. I agree with Maisel and Somkin that at present nicotinic acid should only be regarded as an adjuvant in the treatment of asthma, particularly when adrenaline and ephedrine are proving ineffective or when ephedrine cannot be taken because of toxic symptoms. Further trials with the drug are obviously necessary.

Summary

Nicotinic acid was given to 19 cases of asthma during one or more acute paroxysms in doses of 50 or 100 mg., as a rule intravenously. Definite improvement was obtained in 16 cases. Two cases had marked exacerbations. Control injections of sterile water were usually much less effective.

The drug was given over a long period in 30 cases, 11 of which had already received intravenous therapy. The frequency and severity of the attacks were definitely reduced in 16 of these. The doses used were 50 or 100 mg. 2 or 3 times daily. Half these doses were administered to children. The cases which improved on the drug frequently relapsed when it was discontinued or when they were receiving control tablets of citric acid.

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MENINGITIS DUE TO DIPLOCOCCUS MUCOSUS*

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McFarlan (1941) has recently described the characters of a capsulated Gram-negative diplococcus which had been isolated from the purulent cerebrospinal fluid of a young man. The man had been first seen on account of bed-wetting and slovenliness, and was found to have scanning speech and intention tremor. Pyrexia and signs of meningitis supervened, but he made a rapid recovery after sulphapyridine treatment. The organism was identified as *Diplococcus mucosus*, originally described by von Lingelsheim (1906, 1908) and isolated by him from the nasopharynx and cerebrospinal fluid. Cowan (1938) had described similar strains isolated from the cerebrospinal fluid of patients after operation for cerebral tumour.

While there is considerable evidence that certain of the nasopharyngeal *Neisseria* may under favourable conditions give rise to meningitis, the pathogenicity of the capsulated diplococci for man has not been conclusively proved. It therefore seems of interest to report a case in which the causative organism was almost certainly *Diplococcus mucosus*.

Clinical Features

The patient, a man aged 29, with two years' military service, is a driver attached to a field ambulance. On May 24, 1942,* he developed a slight sore throat, and the next day a pink macular and papular rash was noticed on the trunk. His throat improved, but he felt vaguely out of sorts during the whole week and the rash persisted. There was no fever during this period.

On May 31 he became suddenly ill with severe frontal headache, pains in the back and limbs, and fever. On admission to hospital a few hours later the temperature was 102° F. and pulse 100. The patient was confused and restless, and complained of intense headache. A profuse pink maculo-papular rash was present on the chest, abdomen, upper part of back, and proximal part of the limbs. No petechiae or purpuric patches were seen. Neck rigidity was present, but Kernig's and Brudzinski's signs were negative. A left divergent strabismus and left-sided ptosis were present, but it was subsequently

* A report to the Medical Research Council.