take food which he does not want. A determined baby will not tolerate such forcing. Attempts to give solids before the baby can chew may lead to vomiting. When a baby refuses the food offered it is a good plan to offer him a breast-feed first and then try the solid food after the breast-feed. When he gets used to it the breast-feed is stopped. The same applies to the baby who spits out the cod-liver oil and defies all efforts to give it to him. He will often take it at the end of a breast-feed without difficulty. A baby's crying and fussing during a feed is apt to be considered mere naughtiness, when in fact it is due to thirst, a soiled napkin, fatigue, or teething. It may be due to his desire to feed himself, or to a desire to use a cup instead of a bottle. Attempts to force the child to feed when he does not want it will certainly increase the difficulty. Many mothers are worried by the normal falling off of the weekly weight gain after the first six months, and so of his appetite. If the mother tries to force him to take extra food he will certainly refuse it. The more anxious and fussy the mother, the greater the difficulties which arise. The calm, patient mother who does not force the baby to take food against his will rarely has serious difficulty in feeding her baby.

Conclusions

A very large proportion of feeding difficulties are man-made. They arise from failure to prevent difficulties, from ignorance of the normal variations, and from rigidity and inelasticity in infant feeding instead of adapting the method of feeding to the needs of the individual. Other difficulties arise from the smattering of knowledge possessed by many about nutrition. Ultimately most of the difficulties in infant feeding can be ascribed to the inadequate training of doctors and nurses in the practical details of infant feeding and to the concentration in their teaching on the rare and the obscure, and on complex laboratory investigation and procedure, instead of on the really common problems which they will meet every day in general practice.

REFERENCES

- Aldrich, C. A., and Hewitt, E. S. (1947). *J. Amer. med. Ass.*, **135**, 340.
 Bain, K. (1948). *Pediatrics*, **2**, 313.
 Cathie, I. A. B. (1947). *British Medical Journal*, **2**, 650.
 Fields, H., and Rose, E. K. (1948). *Amer. J. med. Sci.*, **215**, 710.
 Gesell, A., and Ilg, F. L. (1937). *The Feeding Behaviour of Infants*. Lippincott, Philadelphia.
 Gibbens, J. H. (1949). *Lancet*, **1**, 246.
 Kao, Yung-En (1948). *Acta paediatr., Stockh.*, **36**, 233.
 Middlemore, M. P. (1941). *The Nursing Couple*. Hamilton, London.
 Ministry of Health (1944). Report No. 91 on the Breast Feeding of Infants. H.M. Stationery Office.
 Population Investigation Committee and Royal College of Obstetricians and Gynaecologists (1948). *Maternity in Great Britain: A Survey of Social and Economic Aspects of Pregnancy and Child-birth*. Quoted in *British Medical Journal*, 1948, **2**, 948.
 Read, G. D. (1949). *Lancet*, **1**, 721.
 Waller, H. (1946). *Arch. Dis. Childh.*, **21**, 1.
 — (1947). *Mon. Bull. Min. Hlth*, **6**, 73.

Within the next six or eight months the Northern Ireland Tuberculosis Authority hopes to have an additional 200 beds, including 116 for children. Dame Dehra Parker, Minister of Health and Local Government, stated recently that there were 1,381 cases of tuberculosis undergoing treatment in hospital, and that the number awaiting admission was 625. She added that there were now 248 more beds available than on September 1, 1947, when the Authority assumed all functions in connexion with tuberculosis services. The use of sleeping shelters at the homes of patients in suitable circumstances was being encouraged. At present 124 shelters were in use, and approval had been given to the provision of a further 50.

ANTIHISTAMINES IN THE TREATMENT OF NAUSEA AND VOMITING OF PREGNANCY

REPORT ON A CLINICAL INVESTIGATION

BY

T. DOUGRAY, M.B., Ch.B., M.R.C.O.G.

Obstetrician, St. Chad's Hospital, Birmingham; Obstetrician, County Borough of Smethwick

Nausea and vomiting of varying degree occur so often during pregnancy as to be accepted by the patient and her attendant as normal accompaniments of that condition. In some cases, however, in the absence of adequate treatment the vomiting becomes progressive, leading eventually to a complete intolerance of all foods and liquids.

Apart from those cases in which the sickness is associated with disorders of the urinary and gastro-intestinal systems, etc., little is known regarding the origin of the nausea and vomiting of pregnancy, although most clinicians seem to accept neurosis as an aetiological factor of considerable importance. Theories have been advanced which relate the condition to endocrine upsets and dietetic deficiencies; and the usual occurrence of the sickness during the period of placental development has led to speculation on the possible part played by the placenta in producing it. The most interesting hypotheses are those which consider that vomiting of pregnancy is an allergic reaction to albumin of ovo-placental origin, and that it is caused by toxic placental products, such as peptone, guanidine, and histamine, liberated into the blood stream by the activity of the trophoblast.

The conception that histamine might be an important aetiological factor was advanced by Hofbauer in 1926, and Kapeller-Adler (1941) has revived interest in this work. She has investigated the histidine-histamine metabolism in normal and pathological pregnancies. From her results she concludes that the toxæmias of late pregnancy are probably manifestations of histamine intoxication, and that the disorders of the early months, such as morning sickness, excessive salivation, dyspepsia, and headache, may indicate a smaller degree of such intoxication.

The encouraging results obtained from the application of antihistamine drugs to the albuminuria of acute nephritis led to an attempt to determine whether or not the onset of albuminuria as a manifestation of toxæmia could be averted by the use of these drugs in pregnancy. It was soon found that patients who complained of nausea and vomiting experienced relief from their symptoms during the administration of the antihistamine drugs. The response obtained, particularly in cases in which other measures had failed, was so striking that it was decided to carry out a fuller investigation of the therapeutic potentialities of the antihistamines in this condition.

Present Investigation

This clinical investigation was carried out during the period from January 1, 1948, to March 31, 1949, when a total number of 1,816 new patients attended the antenatal clinics of the Public Health Department of the County Borough of Smethwick. In the early part of the investigation observations were made on the effect of an antihistamine drug on patients whose nausea and/or vomiting did not respond to the therapeutic measures generally employed in obstetrics. These measures consisted in advice

on diet, such as the partaking of frequent small meals with abundant carbohydrate, the elimination of fried foods from the diet, and the avoidance of items such as tea and coffee, which in some instances seemed to aggravate the vomiting. All patients were advised to try the effect of eating a biscuit or two before rising from bed. "Marmite," yeast tablets, and dilute hydrochloric acid were also used, either singly or, in certain cases, in combination. The use of the antihistamines as primary agents in treatment was advocated later as the effects of their application were noted. Furthermore, as confidence in the drug was gained—having particular regard to the fact that no untoward reactions of any kind concerning the pregnancy itself were noted—it was found possible in some cases to give a larger therapeutic dose. The drugs used in the investigation were "anthisan" and later, when it became available, "phenegan."

The dosage of anthisan originally employed was one 0.1-g. tablet morning and evening, and this dosage was gradually increased until the drug was being given as a routine five or six times daily. The majority of the cases whose symptoms were not relieved completely by anthisan treatment occurred in the early stages of the investigation, when the smaller doses were given. This gave the impression that a stronger antihistamine drug would lead to better results, and accordingly, when phenegan became available for clinical trial in the latter part of the investigation, it was used in preference to anthisan. In most of the cases a daily dose of one 0.025-g. tablet three times a day proved to be sufficient to relieve symptoms. A few cases required a heavier dose, and in one case (No. 4, below) seven tablets were given daily to control the vomiting. The efficacy of the drug is dependent on the dosage employed, and its effect seems to be cumulative. It was found that the nausea and vomiting were most often relieved within two or three days of starting the drug, and treatment was continued for a period of several weeks to avoid relapse. It was usually possible to discontinue the drug after three or four weeks, but several cases were recorded in which the nausea and vomiting recurred, necessitating a further course of treatment. The chief side-effect noted with both drugs was drowsiness, and in those cases in which the effect was marked 5 mg. of amphetamine sulphate was sufficient to counteract this. The following is a summary of the results.

Total No. of cases	1,816
No. complaining of nausea and/or vomiting	899
No. treated with antihistamine drugs	94
Results of treatment:	
Cure	78 (83%)
Improvement	4 (4%)
Failure	12 (13%)

The use of the drug is illustrated in the following case records.

Case Reports

Case 1.—Mrs. A., aged 25, attended the antenatal clinic during the thirteenth week of her second pregnancy. She had suffered from severe morning sickness during the first pregnancy, the vomiting having continued intermittently until term was reached. She again complained of severe morning sickness, and was advised regarding her diet and the necessity for regular bowel action. When seen again four weeks later, however, she was no better and had lost 3 lb. 12 oz. (1.7 kg.) in weight. Anthisan, one 0.1-g. tablet three times daily, was prescribed for her, and after two weeks of treatment her sickness had disappeared completely. The drug was discontinued and she remained well for a period of four weeks, when vomiting of a milder degree recurred. The drug was therefore prescribed again for a period of one week, after which the vomiting ceased entirely. Apart from the vomiting the pregnancy remained normal throughout and culminated at term in the spontaneous delivery of a healthy female infant of 6 lb. 8 oz. (2.95 kg.).

Case 2.—Mrs. B., aged 38, attended the antenatal clinic in the ninth week of her seventh pregnancy. She complained of severe sickness, which occurred intermittently on several occasions each day, and stated that she had suffered thus throughout each of her pregnancies. She was given advice on general dietetic measures, and the retrodisplaced uterus was manually corrected, a Hodge pessary being inserted to maintain it in position. One week later, however, she was no better, and anthisan, one 0.1-g. tablet five times daily, was prescribed for her. At the end of one week of this treatment her sickness had disappeared entirely. The drug was then discontinued and the patient remained free of this troublesome complaint for the remainder of the pregnancy. She delivered herself spontaneously at term of a healthy male child weighing 8 lb. 10 oz. (3.9 kg.).

Case 3.—Mrs. C., aged 32, attended the antenatal clinic during the seventh week of her third pregnancy. Her two previous pregnancies had been unsuccessful, having terminated at nine weeks and eleven weeks respectively. She now stated that she had been forced to come to the clinic earlier than she had intended because of the severity of her sickness, which caused her constant trouble during the day. Phenegan was prescribed for her—one 0.025-g. tablet morning and evening. She reported a considerable improvement in her condition after four days of this treatment, and she was now sick only once each evening. The dosage was increased to three tablets a day, and this brought complete relief from her symptoms. The treatment was discontinued four weeks after her first visit. She remained well for a further three weeks, when the vomiting recurred, necessitating a further course of treatment for two weeks. Since then she has been perfectly well, and is now within four weeks of her expected date of delivery. The course of her pregnancy has otherwise been normal.

Case 4

The following case record, whilst not occurring within the above investigation, is included because of its unusual interest.

Mrs. X., aged 34, attended the gynaecological clinic in January, 1949, complaining of "one-child sterility." The only lesion discovered on examination was a cervical erosion, which was treated with the coagulating diathermy current. She was next seen during the tenth week of her second pregnancy, having been referred by her doctor because of excessive vomiting. During her first pregnancy she had required hospital treatment for hyperemesis gravidarum. The vomiting this time had started one week after the first missed period. At the beginning it had occurred two or three times daily, but had steadily become worse. Her doctor advised her on the general dietetic measures to be adopted and had tried the effect of insulin on four occasions. Despite this her condition deteriorated and eventually she was vomiting constantly by day and several times by night. During the eighth week of her pregnancy she was admitted to a Birmingham hospital as a case of hyperemesis gravidarum. She was treated for a period of 17 days along the usual lines, receiving phenobarbitone, vitamin B₁, intravenous glucose-saline, and glucose by mouth. There was some improvement in her condition with these measures, but nevertheless she was not cured completely of her vomiting and still had intense nausea when she left hospital. Her condition had been ascribed to neurosis.

Within three days of her discharge from hospital her condition relapsed and she was then admitted to St. Chad's Hospital for further treatment. Her general condition was poor and the acetone series was present in the urine in large amounts. A light diet with an abundant glucose and fluid intake was prescribed and steps were taken to rule out an associated cause of her vomiting. She was also given antihistamine drugs in the following regimen:

First Day.—Phenegan, one tablet at 6 a.m. and 10 p.m.; anthisan, one tablet at 10 a.m., 2 p.m., and 6 p.m.

Third Day.—Phenegan, one tablet at 6 a.m., 4 p.m., and 10 p.m.; anthisan, one tablet at 10 a.m., 1 p.m., and 8 p.m.

Fifth Day.—Phenergan, one tablet at 6 a.m., 12 noon, 5 p.m., and 10 p.m.; anthisan, one tablet at 10 a.m., 2 p.m., and 8 p.m.

Tenth Day.—Phenergan, two tablets at 6 a.m. and 10 p.m., and one tablet at 12 noon, 4 p.m., and 7 p.m.

The drugs were given in this manner in an effort to avoid, if possible, any feeling of drowsiness and also to make use of the minimum efficient dosage. It was found necessary to prescribe 5 mg. of amphetamine sulphate each morning when the dosage reached seven phenergan tablets per day; this counteracted the drowsiness very effectively.

By the end of the third day of treatment her condition had improved considerably, and by the fifth day all vomiting had ceased. The nausea gradually decreased and finally disappeared completely by the eighth day. She remained absolutely symptom-free until she was discharged from hospital on the nineteenth day, looking and feeling a "different woman." Thereafter the dosage was gradually decreased until a maintenance dose of three tablets a day was reached. This was discontinued after a period of three weeks; the symptoms did not recur, and at the time of writing this patient is approaching the end of her second trimester of pregnancy.

Commentary

The treatment of nausea and vomiting of pregnancy still constitutes a major problem in antenatal care. It is well recognized that spontaneous relief of symptoms may be expected by the end of the first trimester of pregnancy, and the majority of patients resign themselves to awaiting this happy outcome. Most cases, fortunately, are of mild degree and do not appear to require any special treatment. When treatment is necessary simple dietary measures usually suffice to give adequate relief. In many cases, however, despite such treatment, the annoying symptoms persist and render life miserable even if they do not constitute a potential danger to it. Such being the case, there is a need for a simple and safe method of treatment which will relieve the symptoms in those patients who do not find dietary measures sufficient.

The results of the investigation into the use of anthisan and phenergan in this condition suggest that the anti-histamine drugs may offer just such a form of therapy. The majority of patients who received treatment with these drugs had already been treated along the usual lines, and, even allowing for the fact that some of these patients could have expected eventual relief without further treatment, it is difficult not to be impressed with the results obtained. At any rate, the success of this method has made it desirable to carry the investigation further with a series of patients treated in various other ways.

I am indebted to Messrs. May and Baker, Ltd., for supplies of anthisan and phenergan, and to the medical advisory staff of that firm for their advice and assistance.

BIBLIOGRAPHY

- Bartholomew, R. A., and Kracke, R. R. (1936). *Amer. J. Obstet. Gynec.*, **31**, 549.
 Browne, F. J. (1944). *J. Obstet. Gynaec. Brit. Emp.*, **51**, 438.
 — (1946). *Antenatal and Postnatal Care*, 6th ed., p. 326. London.
 Cortes, E. Gonzalez (1943). *Rev. Méd. Chile*, **71**, 136.
 Craig, J., Clark, N. S., and Chalmers, J. D. (1949). *British Medical Journal*, **1**, 6.
 Dale, H. (1948). *Ibid.*, **2**, 281.
 De Lee, J. B., and Greenhill, J. P. (1947). *Principles and Practice of Obstetrics*, 9th ed., **112**, 318. Philadelphia.
 Finch, J. W. (1940). *Amer. J. Obstet. Gynec.*, **40**, 1029.
 Harley, D. (1947). *Practitioner*, **158**, 482.
 Hofbauer, J. (1926). *Amer. J. Obstet. Gynec.*, **12**, 159.
 Kapeller-Adler, R. (1941). *J. Obstet. Gynaec. Brit. Emp.*, **48**, 155.
 — (1943). *Ibid.*, **50**, 177.
 Lin, H. H. C. (1947). *Amer. J. Obstet. Gynec.*, **54**, 97.
 Reubi, F. (1946). *Helv. med. Acta*, **13**, Suppl. **18**, 1.
 Senderikhin, M. (1939). *Rev. franç. Gynec.*, **34**, 424.

ANAEMIA OF PREGNANCY IN GLASGOW AND DISTRICT

BY

J. M. SCOTT, M.D.

Assistant Pathologist

AND

A. D. T. GOVAN, M.B., Ch.B., F.R.F.P.S.

Director of Research, Glasgow Royal Maternity and Women's Hospital

The importance of anaemia as a complication of pregnancy seems to have diminished in recent years in many parts of the British Isles. For instance, Fullerton, Mair, and Unsworth (1944) found that in Aberdeen only 3.9% of pregnant women of the hospital class suffered from anaemia, and comparison with previous surveys in that area indicates a rapid diminution in the number of cases since 1935 (Davidson, Fullerton, and Campbell, 1935). Similar observations have been made in Edinburgh (Davidson, Donaldson, Dyar, Lindsay, and McSorley, 1942; Davidson, Donaldson, Lindsay, and Roscoe, 1944).

It is therefore surprising to find that in Glasgow anaemia is one of the commonest complications of pregnancy and among the most serious. Unfortunately no previous investigation has been made in this area, and it is therefore impossible to assess progress.

The following attempt to survey the present position on Clydeside and to discover the cause of this high incidence of anaemia is based on the investigation of 4,595 patients at the antenatal clinic of the Glasgow Royal Maternity and Women's Hospital during 1947 and the latter half of 1946.

Methods

These were the standard procedures adopted by most haematological departments. Venous blood, withdrawn without constriction, was collected in heparinized tubes from every patient attending the antenatal clinic, and all investigations were carried out within six hours. Haemoglobin estimations were made by the Sahli method, 65% on this scale being equivalent to 70% Haldane, or 10.36 g.%. The haemoglobinometers were standardized at regular intervals against blood of known oxygen capacity. Pipettes requiring no correction factor were used.

Most authors consider 70% Haldane to be the lowest normal value during pregnancy. Roscoe and Donaldson (1946) have suggested that this lower limit varies with the patient's age, and that pregnant women in younger age groups are in an anaemic state at haemoglobin levels which come within the range of normality for older women. In view of this we have classified our patients into three groups: those with haemoglobin readings falling within the range 60–65% Sahli were classified "low normals"; those with readings between 50 and 60% were considered moderately anaemic; and those with readings below 50% were regarded as severely anaemic.

Classification of Patients

We found that 17.6% of all patients were anaemic at their first visit to the antenatal clinic. In addition a further 2.5% seen early in pregnancy became anaemic at some later date in pregnancy. These latter patients were in the "low normal" group originally. This gives a high incidence of 20.1%. Owing to the natural curve of haemoglobin values occurring in pregnancy certain corrections