palliative, but any therapy capable of affording symptomatic relief to over two-thirds of otherwise untreatable patients should not remain neglected.

Summary

25 patients with advanced lung cancer were treated with HN2. The results are described, and some correlation with the tumour cytology is made.

A regime for minimizing the side-effects of HN2 is described in detail.

The literature is briefly reviewed.

It is a pleasure to thank Drs. James Blake, Michael Ashby, Peter Davies, Donald Hunter, and Kenneth Perry for their encouragement during this study.

REFERENCES

- Hatch, H. B., Bradford, J. K., and Ochsner, A. (1956). *J. Amer. med. Ass.*, **160**, 1129.
 Kent, L., and Reh, E. P. (1950). *Dis. Chest*, **17**, 190.
 Levine, B., and Weisberger, A. S. (1955). *Ann. intern. Med.*, **42**, 1089.
 Lynch, J. P., Ware, P. F., and Gaensler, E. A. (1950). *Surgery*, **27**, 368.
 Weisberger, A. S. (1958). *Ann. N.Y. Acad. Sci.*, **68**, 1091.

A FURTHER REPORT ON THE CHORDA TYMPANI SYNDROME

BY

A. GREVILLE YOUNG, F.R.C.S.Ed.

Consultant Surgeon, Lister and North Herts Hospitals, Hitchin

AND

G. E. STEIN, M.A., M.B., F.R.C.S.

Consultant E.N.T. Surgeon, Whittington Hospital, London, and lately Lister and North Herts Hospitals, Hitchin

In an article on unilateral sweating of the submental region after eating, including a case report, it was suggested that the symptom-complex be termed "the chorda tympani syndrome" (Young, 1956).

An operation has been performed, the chorda tympani nerve being sectioned on the affected side. This abolished the patient's symptoms completely for one year and partially for still longer. Bauer (1956) and Roland (1956) advocated sectioning of the chorda tympani nerve as it crossed the middle ear. If the theory was correct this seemed to be the right course to pursue, and one of us (G. E. S.) then saw the patient and agreed to carry out the operation. Unfortunately, about the same time the patient developed a middle-ear infection on the affected side, so nothing could be attempted for several months, until all the inflammation had abated.

Case Report

An operation was performed on April 29, 1957, but on reflecting the tympanic membrane by an endaural approach some free fluid was found in the middle ear and the anatomy was thus obscured. Nevertheless, it was believed that the chorda tympani was sectioned, and certainly all symptoms of abnormal sweating were relieved at once. Eating an apple or tasting sour ingredients no longer caused redness and beads of perspiration on the chin of the affected side.

It was decided to publish the result of the operation, but six months later symptoms began to recur. It was thought

that the nerve had regenerated, and it was deemed wise to repeat the operation, but, this time, to remove a portion of the nerve rather than just section it.

This was carried out (G. E. S.) on May 13, 1958. For almost a year after that the patient was completely free of her embarrassing symptoms and was delighted with the result.

However, on questioning and examining her on May 19, 1959, she stated that at breakfast-time one morning early that month she had again sustained a flushing of the right side of the face and a little sweating. She had not taken any unusual or stimulating food that morning. After trying out one or two tests with negative results it was decided to reassess her condition at a later date.

The next examination took place on October 8, 1959. The patient stated that since the first recurrence of trouble early in May she had had several recurrences of flushing and sweating, but all except one had occurred at breakfast-time, the exception being at lunch-time. The attacks occur about one to three times a week, but are not nearly so severe as they used to be and really cause very little trouble or embarrassment. They do not appear to be associated with any particular food. Curiously enough, she seems to know when the attack is likely to occur, because on the days concerned she is conscious of a flow of saliva into the mouth on getting up in the morning and before taking her breakfast. She has had no trouble later in the day (except on the one occasion at mid-day) or when having a meal away from home—for instance, if she goes out in the evening on a social occasion.

When given a sour apple to eat (May 19, 1959, and again on October 8) no reaction occurred. The skin of the chin and face did not show signs of flushing or sweating as it did pre-operatively. There is no loss of taste sensation on eating. Hearing is only very slightly diminished in the right ear (she can still hear a watch ticking), but this may not be due to the operation, because, as noted above, she suffered from middle-ear inflammation before the attempts were made to sever the chorda tympani nerve.

Discussion

The original case report and the discussion regarding causation of the condition excited a great deal of interest, and letters were received from many places, some as far away as Vancouver, Capetown, and Czechoslovakia. A number of letters and articles have also appeared in the *British Medical Journal* discussing the cause of abnormal sweating of the face, particularly in regard to the auriculo-temporal syndrome. It would seem that in these cases, whether they be auriculo-temporal or chorda tympani syndromes, abnormal nerve regeneration is regarded as being the explanation of the conditions, though the mechanism of the abnormal regeneration is still not clear. Whatever the actual cause, sectioning of the particular nerves concerned seems to be a rational procedure. Unfortunately, whether it be the auriculo-temporal nerve which is concerned or the chorda tympani as in the above case, regeneration seems likely. In this case, however, the recurrence of mild symptoms after one year is interesting in that they no longer seem to be brought on by sour or bitter ingredients but occur mostly at breakfast-time, and not every day, suggesting a possible emotional element rather than an anatomical one. At all events the patient, who is a fine-looking girl of 17½ years, is very pleased with the result.

No evidence can be found that the chorda tympani has ever before been sectioned in order to treat unilateral sweating of the submental region.

This particular case report would seem to show that the chorda tympani syndrome is a definite entity which

can be relieved at least temporarily, without any disfiguring scar, by section of the relative chorda tympani nerve as it crosses the tympanic membrane.

It remains to be seen whether over the years the syndrome will again establish itself as a definite entity as before the operation, which would imply a regeneration of the nerve.

We thank Mr. Francis Bauer and Mr. P. E. Roland for their advice, which led to the attempted operations for relief of the condition.

REFERENCES

- Bauer, F. (1956). *Brit. med. J.*, 2, 1176.
 Roland, P. E. (1956). *Ibid.*, 2, 1176.
 Young, A. G. (1956). *Ibid.*, 2, 976.

Medical Memoranda

Hypermelanotic Rash Associated with Sulphonamide Therapy

The various skin rashes associated with sulphonamide therapy, in the production of which idiosyncrasy, allergy, and photosensitization may play a part, are well recognized (Smith, 1944; Freeman, 1944; Lawrence and Francis, 1953).

In the course of an investigation into the occurrence of a hypermelanotic macular eruption during dapsone treatment for leprosy among deeply pigmented Bantu patients in the Belgian Congo (Browne, 1959a, 1959b, 1959c)—an eruption differing from the drug-dermatitis already reported (Lowe, 1950; Barnes and Barnes, 1951; Allday and Barnes, 1951)—two cases were observed in which an identical eruption was apparently caused by sulphaguanidine and sulphathiazole.

CASE 1

A Congolese medical assistant suspected that his wife had on several occasions put poison in his food, occasioning bouts of diarrhoea and recurring crops of hypermelanotic macules; he therefore instituted proceedings for divorce. Circumspect inquiry revealed that his suspicions were first aroused by the rash, and not so much by the diarrhoea; and further questioning elicited the information that the rash appeared for the first time after he had treated the diarrhoea with sulphaguanidine, a total dose of 20 g. spread over three days. On the last

Photograph of Case 1, showing rash on back.

day of this treatment he experienced widespread irritation, and many small bullae appeared on the skin, which, after being scratched, left a raw bleeding surface. Within a few days the bullae healed, but the skin in those areas was black in colour.

During the following months he suffered from several attacks of diarrhoea; and each attack, treated by himself (in an isolated bush dispensary) in the same way, was

followed by the same sequence: pruritus, bullae formation, hyperpigmented macules.

He had never seen such an eruption before, and jumped to the diagnosis that was, to him, the likeliest, explaining both the rash and the diarrhoea.

During the next 12 months, he had no further attacks of diarrhoea, and the macules slowly faded and almost disappeared. Conjugal harmony was restored. Then a single attack of diarrhoea, treated with 7 g. of sulphaguanidine in one day, was followed by the same sequence, and the same suspicions of his wife's murderous intentions. I saw him a few days afterwards, and took the accompanying photograph. Fortified by my personal observations in the matter of dapsone therapy, I was able to suggest the true explanation of the rash (and convince him of it) and offer counsel.

CASE 2

A Bantu woman aged 22 was given oral sulphathiazole for a pustular dermatitis of the forearms; she received 2 g. daily for three days. A week later a hyperpigmented rash appeared, first on the forearms, then on the face, trunk, and legs, but without previous bulla formation. The skin over the whole body irritated intensely. The appearance of the individual elements and the disposition of the rash were similar in all respects to the case recorded above, after the healing of the bullae.

The macules gradually faded, but were still visible six months later as vague blackish spots in the skin.

COMMENT

Neither patient at the time of the examination showed toxic signs attributable to the treatment undergone, and no history of such signs could be obtained. The urine was normal to the usual chemical and microscopical tests.

In both cases the elements of the macular eruption were widely distributed over trunk, limbs, and face, sparing the hairy scalp and the extremities. They were black or, in some lights, dark purplish black, set in a dark-brown skin.

Histological examination of similar macules associated with dapsone therapy reveals masses of a melanin-like pigment deposited in the superficial layers of the corium, both in melanophores and free. The melanocytes are apparently normal.

S. G. BROWNE, M.D., F.R.C.S., M.R.C.P., D.T.M.,
 Medical Superintendent, Yalisombo Leprosarium,
 Province Orientale, Belgian Congo.

REFERENCES

- Allday, E. J., and Barnes, J. (1951). *Lancet*, 2, 205.
 Barnes, J., and Barnes, E. J. (1951). *Leprosy Rev.*, 22, 54.
 Browne, S. G. (1959a). In *Leprosy in Theory and Practice*, edited by R. G. Cochrane. Wright, Bristol.
 — (1959b). *Trans. roy. Soc. trop. Med. Hyg.*, 53, 495.
 — (1959c). *Ibid.*, 53, 506.
 Freeman, H. E. (1944). *Arch. Derm. Syph. (Chicago)*, 50, 45.
 Lawrence, J. S., and Francis, J. (1953). *The Sulphonamides and Antibiotics*, 2nd ed. Lewis, London.
 Lowe, J. (1950). *Lancet*, 1, 145.
 Smith, F. C. (1944). *Sulphonamide Therapy in Medical Practice*, Davis, Philadelphia.

The teaching programme of the University of Pittsburgh School of Medicine will be strengthened this year as a result of a \$400,000 gift from the A. W. Mellon Educational and Charitable Trust. Funds from the gift will be used over an eight-year period to expand the teaching programme of the school's Department of Preventive Medicine from July 1.