PAPERS

Trigeminal neuralgia—earlier referral for surgery

NEIL J. GARVAN
F.R.C.S.I.

JEAN SIEGFRIED
M.D.

Department of Neurosurgery, University of Zürich, CH-8091 Zürich, Switzerland

Summary

Patients with trigeminal neuralgia may be treated in many ways before referral for definitive surgery. This aspect has been looked at in a group of 140 consecutive patients. Patients on prolonged medication have been studied with respect to the period over which the pain occurred and the amount of carbamazepine taken. Earlier referral for surgery is recommended for some of these patients and guidelines are given.

KEY WORDS: trigeminal neuralgia, carbamazepine, thermocoagulation.

Introduction

The incidence of trigeminal neuralgia has been given as 1 in 25000 (4.0/100000/year) (Yoshimasu, Kurland and Elveback, 1972). Patients with this condition may receive many kinds of treatment before being referred for surgery (Loeser, 1978). Such treatment may, at times, be inappropriate, inadequate or prolonged. We have studied a group of these patients referred for a surgical opinion, reviewed their management and made some recommendations.

Materials and methods

One-hundred and forty consecutive patients with trigeminal neuralgia were referred to the outpatient clinic for neurosurgical assessment between January 1980 and October 1981. Each patient was questioned about the starting date of the pain and whether spontaneous remission occurred. With regard to treatment, they were asked if they had had teeth extracted and about maximum dose and total number of carbamazepine tablets taken and what if any were the side effects.

Results

The 140 patients consisted of 85 females and 55 males. The age at the time of referral varied from 22-92 years. The largest number of patients (45) were

in the 60-70 age group (Fig. 1). Pain was most common in the second division of the trigeminal nerve (56 patients).

FIG. 1. Age of 140 patients suffering from trigeminal neuralgia presented in 10-year age groups at the time of neurosurgical assessment.

Pain began from 2 months to 27 years before assessment (Fig. 2). Twenty-two patients had pain for one year or less. Seventy patients (50%) had had pain for 4 years or less, and a further 70 had had pain from 4 years to up to 27 years.

Because of their pain, 102 patients (73%) had had dental assessment. Thirty-five of these had no teeth removed. However, the remaining 67 patients had a grand total of 680 teeth extracted (Fig. 3).

Carbamazepine treatment

All patients except one had been treated with carbamazepine. The maximum number of tablets (200 mg) taken in a day varied from 1 to 12. Three tablets a day was the maximum number taken by the largest group of patients (36). Eighteen patients took a maximum of 7 or more tablets a day.

The total number of carbamazepine tablets taken since pain began varied from one tablet up to approximately 25000. From Fig. 4, it will be seen that the largest group of patients (33) took between 100-999 tablets. Eighty-one patients (58%) took fewer than 3000 tablets, leaving 59 (42%) who took

FIG. 2. Number of years since trigeminal pain began before neurosurgical assessment.

FIG. 3. Number of teeth removed in 67 patients out of 102 who consulted a dentist.

3000 or more tablets and of these 27 took 10000 or more.

Ninety-seven patients (69%) complained of side effects related to carbamazepine. These reactions were primarily dizziness, drowsiness or gastrointestinal disturbance which were dosage dependent and required medication reduction with an unsatisfactory pain relief. Sixty-five patients took a maximum of 5 or less tablets per day due to side effects. Two patients after just one tablet refused to take any more due to the side effects of nausea and skin rash. One patient developed a leucopenia.

Spontaneous remission

Seventy-four patients (53%) reported spontaneous

FIG. 4. Total number of carbamazepine tablets taken.

remission of their pain while 66 patients denied any. The longest period of remission varied from less than one month in 14 patients to up to 36 months. For 41 patients, it was 3 months or less, while for 59 patients (80% of those with spontaneous remission) it was 6 months or less. The patient whose pain stretched over 27 years never had a spontaneous remission lasting longer than 6 months.

Discussion

From the foregoing, it can be seen that many patients had dental extractions due to being misdiagnosed and therefore had inappropriate treatment. A small group of 28 patients were inadequately treated as they were unrelieved of pain and without side effects and yet took 1000 mg or less carbamazepine a day. However, it is to the group of patients on prolonged medication we have mainly turned our attention.

Failed medical treatment is an indication for consideration of surgical intervention in trigeminal neuralgia (Editorial, 1981). However, there is an absence of definite guidelines, so many a doctor may be left unsure as to when to consider medical treatment as having failed on the one hand or be reluctant to refer his patient for surgery, being aware of the risks involved.

If we first of all consider the duration over which pain occurred, it can be seen that 22 patients had pain occurring for one year or less. Seventy patients had pain spreading over 4 years or less and this leaves 70

patients (50%) with pain occurring over 4–27 years. Alongside this, it can be seen that 69% of the patients complained of side effects related to carbamazepine. Also, only 53% noted spontaneous remission of pain and for over 50% of these a remission period was never longer than 3 months.

Therefore, looking at the picture as a whole it can be seen that many patients whose pain is not controlled may continue to have pain over many years with little hope of long lasting spontaneous relief and at the same time be burdened by side effects of the medication. So for these patients, earlier referral for consideration of surgery is recommended. Partially controlled trigeminal neuralgia should not be allowed to continue beyond one year. Obviously, if the pain is completely uncontrolled, severe and/or frequent, referral should be much earlier.

There are patients who continue to take medication over many years who often end up consuming vast amounts of tablets. The pain may be very well controlled on the medication. However, one must not forget that carbamazepine may cause serious side effects such as agranulocytosis and aplastic anaemia and patients on this medication need to be monitored carefully (Grill, 1973). One should also keep in mind the financial cost of large amounts of these tablets. Looking at the present series, it can be seen that 42% of the patients took a total of 3000 or more tablets while 19% took between 10000 and 25000 tablets.

In view of this, one might recommend that any patient who has taken 3000 tablets and who still needs carbamazepine medication, even if the pain is well controlled by it, should be considered for surgical referral.

In order to justify recommending earlier referral of these patients for surgery, the risks must be small. The surgery we favour is percutaneous trigeminal radiofrequency rhizotomy. This has proved to be one of the safest, least expensive and most reliable operations for the relief of trigeminal neuralgia. It is a

simple technique, carries little stress, can be performed in the elderly, requires minimal hospitalization time and can produce selective destruction of pain fibres. Since its introduction in 1965 by Sweet there have been many large series of cases published (Sweet and Wepsic, 1974; Loeser, 1978; Tew and Keller, 1977; Siegfried, 1977, 1981). Short term success of 98.1% is found. A recurrence rate of 5% after one year and 21% after 5–7 years appears acceptable as the procedure causes no mortality or severe morbidity and can be repeated easily (Siegfried, 1981).

Conclusion

A group of 140 consecutive patients with trigeminal neuralgia who were referred for surgery have been studied. Earlier referral for surgery is recommended in patients who are poorly controlled and also for those on prolonged medication; guidelines are given.

References

- EDITORIAL (1981) Trigeminal neuralgia: treat but do not prolong. *British Medical Journal*, **282**, 1821.
- GRILL, W.E. (1973) Carbamazepine. *Annals of Internal Medicine*, **79**, 844.
- LOESER, J.D. (1978) What to do about tic douloureux. *Journal of the American Medical Association*, **239**, 1153.
- SIEGFRIED, J. (1977) 500 percutaneous thermocoagulations of the Gasserian ganglion for trigeminal neuralgia. *Surgical Neurology*, **8**, 126.
- SIEGFRIED, J. (1981) Percutaneous controlled thermocoagulation of Gasserian ganglion in trigeminal neuralgia. Experiences with 1000 cases. In: *The Cranial Nerves*, 322 (Eds. M. Samii and P.J. Jannetta). Springer-Verlag, Berlin, Heidelberg.
- SWEET, W.H. & WEPSIC, J.J. (1974) Controlled thermocoagulation of trigeminal ganglion and rootlets for differential destruction of pain fibers. *Journal of Neurosurgery*, **40**, 143.
- TEW, J.M. & KELLER, J.T. (1977) The treatment of trigeminal neuralgia by percutaneous radiofrequency technique. *Clinical Neurosurgery*, **24**, 557.
- YOSHIMASU, F., KURLAND, L.T. & ELVEBACK, L.R. (1972) Tic douloureux in Rochester, Minnesota, 1945–1969. *Neurology*, **22**, 952.

(Accepted 20 January 1983)