Chronic facial pain together with severe depression is responsive to electroconvulsive therapy

A case report

Göran Hampf, Kimmo Kuoppasalmi, Markus Henriksson and Kalle Achté

Facial Pain Clinic, Institutes of Dentistry, and Department of Psychiatry, University of Helsinki, Helsinki, Finland

Hampf G, Kuoppasalmi K, Henriksson M, Achté K. Chronic facial pain together with severe depression is responsive to electroconvulsive therapy. A case report. Acta Odontol Scand 1992;50:129–132. Oslo. ISSN 0001–6357.

Electroconvulsive therapy (ECT) is widely accepted as a treatment for severe depression, but is seldom used in the treatment of chronic pain even though chronic pain and depression frequently occur together. This study presents a case in which ECT relieved both severe depression and chronic pain. It seems that the recognition of depressive disorders merits more attention and that ECT as a treatment for chronic pain in patients with severe depression should be taken into consideration in cases in which other treatments have failed. □ *Chronic pain; depression; electroconvulsive therapy; facial pain*

Göran Hampf, Facial Pain Clinic, Institutes of Dentistry, University of Helsinki, Mannerheimintie 172, SF-00300 Helsinki, Finland

The association of chronic pain and depression is clinically important. The prevalence of depressive disorders has been reported to be high in patients with chronic pain (1–7). Most studies report a prevalence between 30% and 60%, depending on the type of pain and diagnostic criteria. Most investigations suffer from the fact that there are several ways of filtering the pain population seen in a pain clinic.

In a randomly chosen material consisting of 131 patients with chronic intractable facial pain referred for a psychiatric interview (30 refused), 17 of 101 had a severe mental disorder, 42 of 101 a moderate mental disorder, and 30 of 101 a slight mental disorder (3, 8). Fifteen patients had various depressive disorders defined by DMS-III-R criteria as the principal diagnosis (9). Three of the patients with severe mental disorders had a major depression.

Electroconvulsive therapy (ECT) has been used for over 50 years in the treatment of mental disorders (10). In the late fifties its use declined owing to the development of neuroleptic and antidepressive drugs. Today ECT is still the method of choice in cases of severe or suicidal depression. It is a safe mode of treatment with the same mortality as that of general anesthesia. The only contraindication is increased intracranial pressure (11–13). Electric stimulation should produce a grand mal type of convulsion, the duration of which should be at least 25–120 sec. Anticonvulsive drugs should be withdrawn before treatment (14, 15). The non-dominant cerebral hemisphere is usually stimulated unilaterally. One of the electrodes is placed in the frontotemporal area and the other at least 10–12 cm away, usually on top of the head or on the forehead (Fig. 1). A current of 500–600 mA is often used for at least 4 sec. ECT consists of a series of treatments, usually 6–10, performed once every 2 or 3 days (15).

There have recently been reports of the successful use of ECT in patients with chronic pain together with severe depression (16–18). McFadden (19) describes a series of nine chronic pain patients with severe depression; four of these patients obtained good long-term pain relief and returned to work, and two experienced an improvement in their depressive symptoms and an increase

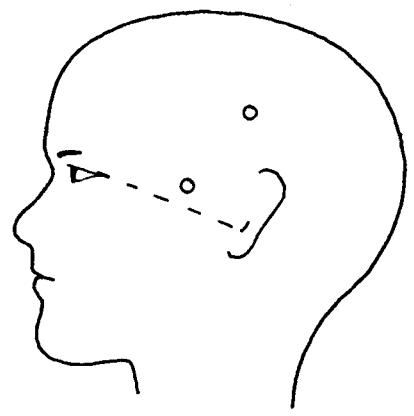

Fig. 1. Site of electrodes in electroconvulsive therapy.

in activity. Other authors have also reported that ECT might be useful as an additional treatment in chronic pain syndromes with depression (20–22). We describe here a case in which chronic facial pain together with severe depression responded to ECT.

Case report

In 1984 a retired nurse aged 60 years was referred to the Institutes of Dentistry of the University of Helsinki because of excruciating pain in her left mandible and left maxilla. So far the patient has visited our clinic 108 times during 7 years. Since 1985 her main medication has been 150 mg amitriptyline daily, more recently in conjunction with 2 mg clonazepam daily, supplemented in 1988 with 8 mg perphenazine daily, all without any significant subjective effect. She was sent for a psychiatric consultation, which showed that she had a major depression. The patient has been referred to a hospital for psychiatric inpatient treatment three times, but without any effect on her pain condition. The patient did not quite believe that she had an idiopathic pain condition, so she continued the examinations and treatments prescribed by all her physicians (for further details, see Ref. 23). In 1990 she attended a 3-week rehabilitation outpatient course at the Institutes of Dentistry, designed for patients with intractable non-malignant facial pain not responding to any conventional treatment. After a good initial response she relapsed 3 months later. The patient described her mood as depressed only when specifically asked. She had lost interest in meeting friends, something which had earlier given her much pleasure. She found it difficult to fall asleep and said that she woke up too early. She also had difficulty concentrating during a normal conversation and had a feeling of restlessness and loss of energy. As her facial pain seemed to be almost unbearable, she was referred to the Department of Psychiatry of Helsinki University Central Hospital with the suggestion that ECT could be tried. When her dosage of clonazepam was reduced to 0.5–1.0 mg/day, the patient became psychomotorically agitated and screamed for help because of pain and anxiety, describing her situation as hopeless. She seemed not to have any suicidal ideation, guilt feelings, delusions, or change in appetite or weight, but her symptoms still fulfilled the DSM-III-R criteria (9) for severe major depressive disorder; hence, the patient seemed to fulfill the criteria for ECT. She was also examined by an internist, and computed tomography (CT) and electroencephalography (EEG) were performed without any abnormal findings. The patient received unilateral ECT 7 times, for altogether 94 convulsion seconds. After the seventh time the patient wanted to discontinue treatment. After treatment her mood was still depressed but showed a marked improvement. She retained her interest in various activities. Her ability to concentrate improved both subjectively and objectively. She still had difficulty in falling asleep but no longer woke up too early. Her feeling of restlessness had diminished, and she was psychomotorically normal. Although the pain had subjectively not eased, the patient said she felt she now had greater control over her pain. She had no pessimistic thoughts about her future. Her supportive psychotherapy was continued during the hospitalization.

On leaving the hospital she returned to her old medication, amitriptyline (150 mg/day), clonazepam (2 mg/day), and methadone (5–10 mg/day). The patient seemed to

be satisfied with this medication and became active in many ways: she was twice able to travel to the south with her husband, and she engaged herself in several other activities. Nine months after ECT the patient is still coping well with her pain.

Discussion

The successful treatment of chronic pain syndromes needs a biopsychosocial approach. Various psychosocial therapies have been described, ranging from behavioral management to a combination of family therapy, biofeedback, and cognitive therapy (24). In the present case several treatment trials had been used without any long-term effect. Clinical practice and the literature suggest that ECT is quite rarely used as therapy in patients with pain syndromes together with depression (25) and that in such cases antidepressants are more often used. In the present case severe depression was markedly alleviated by ECT, and 6 months after the therapy the patient seems to be enjoying life for the first time in 8 years.

The mechanism of ECT is not well understood. It is known that grand mal convulsions are needed to produce any response. ECT causes numerous and complex neurochemical changes, and many of those that occur acutely are probably not directly involved in the therapeutic effects of ECT (26). Slow changes in neurotransmitter receptor systems are most likely to represent the therapeutic effect of ECT.

A change in the serotonergic neurotransmission seems to play a role both in depression and in pain syndromes. Series of seizures seem to increase behavioral sensitivity to drugs that stimulate central serotonergic receptors (27–29). In addition, ECT seems to increase central serotonergic sensitivity and different endogenous opioid activity, which influences the pain threshold and may be of significance in the relief of severe depression and chronic pain.

Today, tricyclic antidepressants are among the drugs most widely used in the treatment of chronic pain. When amitriptyline is used, a daily dose of 75–100 mg is commonly prescribed. If the patient is also depressive, a higher daily dose is recommended. ECT may be taken into consideration when all other treatment trials seem to have failed.

As the patient's pain is located in the area treated by dentists, she has repeatedly been referred to dental specialists in addition to medical specialists. She has repeatedly received a lot of unnecessary treatment that failed to alleviate the problem and in some cases exacerbated it. At least for the moment her vicious circle seems to have been broken.

There have been reports that only a few pain patients receive adequate treatment for depression (30–37). In cases like the present one it is essential for health professionals to be able to recognize a depressive disorder, to give the patient effective treatment, to avoid unnecessary treatment, and to make the patient's life worth living.

References

1. Haythornthwaite JA, Sieber WJ, Kerns RD. Depression and chronic pain experience. Pain 1991;46:177–84.
2. Hughes AM, Hunger S, Still D, Lamey P-J. Psychiatric disorders in a dental clinic. Br Dent J 1989;166:16–9.
3. Hampf G, Vikkula J, Ylipaavalniemi P, Aalberg V. Psychiatric disorders in orofacial dysesthesia. Int J Oral Maxillofac Surg 1987;16:402–7.
4. Roy R. Measurement of chronic pain in pain-depression literature during the 1980s: a review. Int J Psych Med 1986;16:179–88.
5. Reich J, Rupin JP, Abramovitz SI. Psychiatric diagnosis of chronic pain patients. Am J Psychiatry 1983;140:1495–8.
6. Kramlinger KG, Swanson DW, Maruta T. Are patients with chronic pain depressed? Am J Psychiatry 1983;140:747–9.
7. Doan BD, Wadden NP. Relationship between depressive symptoms and descriptions of chronic pain. Pain 1989;36:75–84.
8. Hampf G. Somatic and psychic aspects of orofacial dysaesthesia. Proc Finn Dent Soc 1987;83 Suppl II:1–72.
9. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 3rd rev. ed. Washington DC: The Association, 1987.
10. Kalinowski LB. History of convulsive therapy. Ann NY Acad Sci 1986;462:1–4.
11. Hamilton M. Electroconvulsive therapy. Indications and contrindications. Ann NY Acad Sci 1986;462:5–11.

12. Fink M. Convulsive therapy: a manual of practice. Rev Psychiatry 1988;7:482–97.
13. Ottosson J-O. Use and misuse of electroconvulsive treatment. Biol Psychiatry 1985;20:933–46.
14. Small IF, Milstein V, Miller MJ, Malloy FW, Small J. Electroconvulsive treatment—indications, benefits, and limitations. Am J Psychother 1986;40:343–56.
15. Spoov J, Lydecken K, Kuoppasalmi K, Suhonen-Malm AS, Juvonen H. Sähköhoito (electroconvulsive therapy). Suomen Laakarilehti 1990;45: 2898–902.
16. Salomon JB, Hanna MH, Williams M, Toone B, Wheeler M. Thalamic pain—the effect of electroconvulsive therapy (ECT). Pain 1988;33:67–71.
17. Antkiewicz-Michaluk L, Michaluk J, Romanska I, Vetulani J. Effect of repetitive electroconvulsive treatment on pain and on [3H]nitrendipine binding sites in cortical and hippocampal membranes. Psychopharmacology (Berlin) 1990;101:240–3.
18. Weiner RD, Coffey CE. Indications for use of electroconvulsive therapy. In: Frances AJ, Hales RE, editors. Review of psychiatry. Vol VII. Washington: American Psychiatric Press, 1988:458–81.
19. McFadden IJ. Selective use of electroconvulsive therapy in patients with chronic pain and severe depression [abstract]. Fourth International Symposium; 18–21 November 1990; The Pain Clinic, Kyoto: 106.
20. Bradley JJ. Severe localized pain associated with the depressive syndrome. Br J Psychiatry 1966; 112:651–9.
21. Mandel MR. Electroconvulsive therapy for chronic pain associated with depression. Am J Psychiatry 1975;132:632–6.
22. Grahame-Smith DG, Green AR, Costain DW. Mechanism of action of the antidepressant action of electroconvulsive therapy. Lancet 1978;1:254–6.
23. Hampf G, Kalso E. Chronic use of opioids in intractable facial pain. Acta Odontol Scand 1991;49:215–8.
24. France RD, Houpt JL, Ellinwood ED. Therapeutic effects of antidepressants in chronic pain. Gen Hosp Psychiatry 1984;6:55–63.
25. von Knorring L. Common pathogenic mechanisms in chronic pain syndromes and in depressive disorders [abstract]. Biol Psychiatry 1991;29:83.
26. Lason W, Przewocka B, Przewocki R. Single and repeated electroconvulsive shock differentially affects the prodynorphin and pro-opiomelanocortin system in the rat. Brain Res 1987;403:301–7.
27. Kellar KJ, Stockmeier CA. Effects of electroconvulsive shock and serotonin axon lesions on beta-adrenergic and serotonin-2 receptors in rat brain. Ann NY Acad Sci 1986;462:76–90.
28. Meltzer H. Serotonic dysfunction in depression. Br J Psychiatry 1989;155 Suppl 8:25–31.
29. Leber B, Belkman RH. Receptors and the mechanism of action of ECT. Biol Psychiatry 1982;17: 497–511.
30. Magni G, Caldieron C, Rigatti-Luchini S, Merskey H. Chronic musculoskeletal pain and depressive symptoms in the general population. An analysis of the 1st national health and nutrition examination survey data. Pain 1990;43:299–307.
31. Hampf G, Aalberg V, Ekholm A, Vikkula J. Sensibility threshold in depressive and non-depressive patients with chronic pain. Anesth Prog 1988;35: 152–4.
32. Hampf G, Ekholm A, Salo T. Sensibility threshold, mental health and endocrine markers in patients with chronic pain. Int J Psychosom 1983;36:37–40.
33. Hampf G. Hypersensitivity due to stress. Anesth Progr 1989;36:265–7.
34. Gupta MA. Is chronic pain a variant of depressive illness? A critical review. Can J Psychiatry 1986; 31:241–8.
35. Merskey H. Does depression cause pain or pain cause depression? [Abstract]. Biol Psychiatry 1991;29:81.
36. Kanton W, Egan K, Miller G. Chronic pain: lifetime psychiatric diagnoses and family history. Am J Psychiatry 1985;142:1156–60.
37. Hampf G. Dilemma in treatment of patients suffering from orofacial dysesthesia. Int J Oral Maxillofac Surg 1987;16:397–401.

Received for publication 13 November 1991