**Case report**

A 41-year-old female patient was admitted to the oncological surgical centre of the hospital for elective total thyroidectomy for multinodular goitre. The diagnosis of Graves disease was made following an ultrasound scan of the thyroid and thyroid function tests TSH < 0.015 mIU.L⁻¹ (normal value: 0.2-5.0 mIU.L⁻¹), f T3 = 7.3 ng.L⁻¹ (normal value: 1.67-3.45 ng.L⁻¹) and f T4 = 14.7 ng.L⁻¹ (normal value: 7.1-18.5 ng.L⁻¹) (Roche Modular Analytics, Elecsys Module, Roche Diagnostics NV Belgium).

Her medical history revealed multiple abortions, De Quervain tendinitis of the right arm, right thoracotomy for intercostal pain, cervical neck pain and smoking. The patient did not have a history of allergy. Up to the day of surgery, the patient was medicated with bisoprolol 5 mg once a day and propylthiouracil 100 mg three times a day. The patient was scheduled for total thyroidectomy after a standard preoperative investigation including preoperative blood tests, ECG, X-ray of thorax, lung function examination and laryngoscopy, which all were normal. The premedication consisted of midazolam 4 mg and glycopyronium bromide 0.2 mg given intramuscularly supplemented with her habitual home medication.

The procedure was performed without problems and took 125 minutes including time for induction and emergence. The drugs used were sufentanil, propofol, cisatracurium and desflurane. Postoperative analgesia was provided by diclofenac 75 mg and propacetamol 1 g i.v. given peroperatively. Following surgery the patient was observed in the postanaesthesia high care unit.

Monitoring included temperature, blood pressure, heart rate, oxygen saturation and the patient was observed for bleeding and swelling of the neck region. Oxygen 6l/min was administered by a nasal canulla. Blood was analysed for calcium, albumin, magnesium and phosphor serum level.

After 90 minutes the patient developed a sudden redness of the skin on the left side of her face (Fig. 1). The skin did not feel dry. Palpebral slit and pupil diameter were equal on both sides. No changes in vital signs were detected. The patient did not report any difficulty with breathing, swallowing or speaking. Out of several possibilities as to the origin of this syndrome as discussed below, Frey’s syndrome was selected as the most plausible. Oxygenation was stopped. The facial redness seemed to diminish after one hour and a half and 5 hours and a half later the symptoms had disappeared completely without any treatment. No further clinical problems were observed and the following morning the patient was discharged from the post anaesthesia care unit. Further hospital stay was uneventful and the patient was discharged two days later. Further medical treatment was L-thyroxine 100 µg once a day, calcium 1 g 4 times a day and propacetamol as needed for pain.

**Discussion**

This clinical picture with flushing at one side of the face in a female patient has several possible diagnoses. To be considered are: herpes zoster infection, erysipelas,
mycosis fungoides, lupus, trigeminus neuralgia, steroid dermatitis, toxic dermatitis, allergic eczema, urticaria, pre-menopausal flushing, Horner’s syndrome and Frey’s syndrome (1-4). As there were no elements for most of these differential diagnoses, Frey’s syndrome was considered to be the cause. Horner’s syndrome typically includes ipsilateral ptosis, pupillary miosis and anhidrosis, none of which were present at the time of the facial flushing or afterwards (5). Frey’s syndrome is a rare neurological disorder characterised by unilateral sweating and flushing of the facial skin. Synonyms of Frey’s syndrome are “auriculotemporal syndrome, Baillarger syndrome, Dupuy’s syndrome, Frey-Baillarger syndrome, salivosudoriparous syndrome, sweating gustatory syndrome and von Frey syndrome” (6). The syndrome affects the skin area of the parotid gland secondary to eating, thinking or talking about food, which produces a strong salivary stimulus. Clinically these patients develop a unilateral flushing and sweating in the molar region of the face, where flushing is prevalent in females and sweating in males (6). Usually the syndrome is a sequel of parotidectomy, but may follow other surgical, inflammatory or traumatic injuries of the parotid and submandibular glands and the cervical and upper thoracic portions of the truncus sympathetic (7). As a consequence the skin innervated by the n. auricularis magnus, the n. occipitalis minor, the n. buccalis or the cutaneous branch of the cervical plexus can be involved.

The clinical incidence of Frey’s disorder after parotidectomy is approximately 53%. The syndrome can develop acutely or even one year or more after parotidectomy. Six percent of the cases are severe, but in the other cases the symptoms are usually mild and well tolerated (7). In this case report we did see a sudden flushing without sweating at one facial side of a female patient. This patient showed normal vital parameters, no temperature and no other signs of infectious pathology. So we considered that the temporary hemifacial redness or Frey’s syndrome in this patient appeared as a result of oedematous irritation of the cervical part of the sympathetic trunk after thyroidectomy.

Principal innervation of the thyroid gland comes from the autonomic nervous system. Parasympathetic fibers come from the vagus nerves, and the sympathetic fibers are distributed from the superior, middle and inferior ganglia of the sympathetic trunk. These small nerves enter the gland along with the blood vessels. The sympathetic cervical ganglion provides innervation to the pineal gland and median eminence through the internal carotid nerve and to the thyroid and parathyroid glands through the external carotid nerve (8). The present thyroid operative technique exists of capsular dissection of the thyroid gland. During surgery care has to be taken to preserve the vascular supply, the recurrent laryngeal nerve, the external branch of the superior laryngeal nerve and the cervical sympathetic ganglia. It was reported recently that very fine direct anastomoses from the sympathetic ganglia to both the recurrent laryngeal nerve (RLN) as well as the external branch of the superior laryngeal nerve (EBLN) are very common if not universal. Occasionally the sympathetic branch from the superior cervical ganglion hitchhikes along the EBLN and then communicates to the RLN along with the ‘nerve of Galen’ (9).

Having all this reported, we can hereby conclude that thyroidectomy can lead to nerve damage or nerve irritation which can explain the symptoms of Frey’s syndrome in this patient.

References

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V. Van Gorp  
Dienst Anesthesie  
Universitair Ziekenhuis Brussel  
Laarbeeklaan 101  
B-1090 Jette, Brussels, Belgium  
Tel. : 32-2-4778964  
E-mail : Viola.vangorp@az.vub.ac.be