# Personality analysis of patients complaining of sialorrhoea

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BACKGROUND: Sialorrhoea, the symptom of apparent excessive secretion of saliva is a relatively uncommon complaint. Some authors consider that in the absence of clinical findings, then these patients have a psychiatric disorder masquerading as a physical illness. However, there is little evidence in the literature to support this conclusion and a detailed psychological assessment of this population has not previously been reported.

METHODS: In total, 18 patients and 18 age- and sexmatched controls were studied. All had a history of a complaint of excess salivation in the absence of any oral mucosal or systemic abnormality. All patients completed an Eysenck Personality Questionnaire.

**RESULTS:** There were no differences in the extroversion of psychoticism scores between the study and control group. However, the result showed significant increases in the neuroticism and Lie Scale score in the patient group.

CONCLUSIONS: The overall results of this study indicate that the complaint of sialorrhoea in otherwise healthy individuals does not have an organic basis and suggest that sialorrhoea is associated with high levels of neuroticism and a tendency to dissimulate. | Oral Pathol Med (2006) 35: 307–10

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### Introduction

The symptoms of excess salivation, sialorrhoea, can be considered from two points of view. In one group of patients such as those with cerebral palsy (1-3), oropharyngeal or oesophageal disease (4), Down's syndrome (5), multiple disability (6) or neurological impairment (7) the accompanying systemic conditions are clinically evident. In those patients a variety of procedures have been attempted to remedy the problem

ranging from surgery (8) to drug therapy (9). Surgical options have ranged from tongue resection (10) to submandibular duct transposition (11, 12) and other procedures (13). Drug therapy has also been utilized in those patients and has involved transdermal scopolamine (14, 15) botulinus toxin type b (16–18) buscapine (19), benzhexol hydrochloride (20) and antipsychotic medication (21). Rarely sialorrhoea can also be drug related (22). The acknowledged difficulty in management of such patients led to the Consortium on Drooling whose 10-year results were published in 2002 (23) and 2003 (24).

The second group of patients complaining of sialorrhoea appear clinically normal but complain of saliva 'continually running out of the corners of my mouth' or 'my pillow is soaked with saliva every night' or 'I am constantly having to dab the corners of my mouth dry'. These patients do not appear to have any of the recognized causes for sialorrhoea and it is rare to find any organic pathology on examination. This lack of any significant finding on investigation along with the preoccupation these patients have with their symptoms and uniformly poor response to treatment has led some clinicians to believe that these patients have psychiatric disorders masquerading as a physical illness (25, 26). However, there is little evidence in the literature to support this conclusion and a detailed psychological assessment of this population has not to our knowledge previously been reported. This prospective study was, therefore, designed to determine whether this group of patients differ from the control population on objective measurements of personality.

### Materials and methods

#### Subjects

Eighteen patients and 18 age- and sex-matched control patients were included in the study. Each patient was considered to fulfil criteria for inclusion into the study if they reported in their own words and had been referred specifically for any of the following symptoms – 'too much saliva', 'saliva overflow to my mouth', 'saliva dribbles out of the corners of my mouth', 'I continually need to spit or swallow to get rid of the saliva' or 'I continually need to dab the corners of my mouth dry to

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get rid of the saliva'. Provided the patients appeared clinically healthy all were included to exclude the possibility of bias in recruitment.

An age- and sex-matched control group of healthy individuals with no oral complaints were included for a comparison. These subjects were adults attending two local facilities – a church group and a community centre. These two facilities were chosen to ensure a similar social class distribution to these patients who had attended the clinic. The controls were recruited randomly but pair matched by age and sex to members of the patient group (the first 50 to 55-year-old male control was matched to the first 50 to 55-year-old male patient and so forth).

# Clinical haematological and biochemical assessment

On entry to the study all patients were interviewed by the same clinician (P-JL) and a comprehensive case history taken followed by a physical examination to confirm the patients appeared to be in good health. Venepuncture was then performed for the following assays, full blood count, ferritin, vitamin B12 and folic acid and a fasting blood glucose. Following this the patient underwent an oral rinse to measure candidal carriage (27) and stimulated parotid flow rates as previously described (28).

The personality measure employed was the Eysenck Personality Questionnaire (EPQ). This is a 90-item (Yes/ No) questionnaire that was chosen as it is a wellestablished instrument whose validity and reliability have been comprehensively investigated (29, 30). The three main dimensions of personality measured by this questionnaire are found to underlie other quite different inventories and have a substantial genetic component and so are generally regarded as the three most important personality traits (31).

# Statistical analysis

A student *t*-test was used to compare patient and control subjects. P < 0.05 was considered significant.

# Results

All 18 patients and 18 control subjects completed the study. Their age and sex distribution showed them to be well matched: both groups had 11 females and seven males aged 63.1 years ( $\pm$ 11.8 years sialorrhoea group) and mean age of 56.9 years ( $\pm$ 10 years control group). There was no significant difference between the ages of the patients or the controls. Despite a comprehensive history being taken, there were no reports of recognized causes of sialorrhoea nor of patients being on medication recognized as being associated with this complaint.

The only positive finding in the patient's history was that three patients had a history of psychiatric disorder sufficient that they had attended the psychiatric services. Review of these cases showed all had received a diagnosis of affective disorder (depression) and had been offered treatment for this.

In no patient was any clinical abnormality uncovered on examination, either oral examination or general physical assessment. The denture status of both groups was that eight patients wore complete dentures, four wore partial dentures and six patients were dentate. The onset of the complaint of sialorrhoea did not coincide with the provision of dentures in any patient.

# Laboratory investigations

Clinical assessment of salivary flow was unremarkable. Stimulated salivary flow rates were found to be satisfactory in all patients with all values falling within the range 0.8–1.8 ml per gland per minute. The only abnormalities uncovered by haematological or biochemical examination of the patient group was that of sideropenia in two patients. Sideropenia means iron deficiency for the age and sex of the patients in the absence of anaemia. Systemic iron therapy with ferrous sulphate 200 mg, 8-hourly for 3 months corrected the deficiency (on repeat assay) but was not associated with any improvement in the patients' symptomatology.

In two patients, *Candida albicans* were isolated from the oral rinse. Both patients received a 4-week course of Nystan Pastilles which eliminated the oral candidal species, as assessed by repeat oral rinse, but did not alter the patients' symptoms.

# Eysenck Personality Questionnaire

All the patients were able to understand and complete the EPQ without difficulty. The results of the questionnaire are summarized in Figs 1–4. The results are shown by the four subscales of the EPQ which are as follows:

N – Neuroticism (emotional, worrying, anxious vs. calm, stable)

E – Extraversion (outgoing, sociable vs. withdrawn, aloof)

P – Psychoticism (tough-minded vs. tender-minded)

L – 'Lie' Scale (a measure of willingness to admit to common failings: used to determine whether the questionnaire is being answered honestly)

As can be seen from Figs 2 and 3 patients did not differ from controls on either their extraversion scores (patients  $10.11 \pm 5.09$ , controls  $10.33 \pm 5.88$ , NS) or on their psychoticism scores (patients  $2.44 \pm 1.46$ , controls  $1.50 \pm 1.36$ , NS). Significant differences were, however, observed in relation to neuroticism (Fig. 1) and Lie scores (Fig. 4).



**Figure 1** Neuroticism (N-score) for patients and controls. A significant difference is present (P < 0.02).



E-score - 'Extroversion' measures extrovert/introvert

Figure 2 Extroversion (E-score) for patients and controls. No significant difference is evident.



Figure 3 Psychoticism (P-score) for patients and controls. No significant difference is present.



Figure 4 'Lie' score (L-score) for patients and controls. A significant difference is present (P < 0.02).

## Discussion

A number of interesting and potentially useful points can be made from this study. First, only 18 patients were recruited with sialorrhoea over a period of 18 months, a recruitment of one a month. During this same time period, the clinic had around 6000 patient attendances. Whilst it is likely that a specialist Oral Medicine clinic may be expected to see larger numbers of patients with unusual or atypical disorders than is the norm, this figure would suggest of 18 patients that sialorrhoea, although not common, is also not rare.

Secondly, by being unable to discover any significant oral or other physical pathology in the patient group and in those few cases where laboratory investigations were abnormal correcting these did nothing to alleviate the patients' symptoms. This confirmed earlier clinical experience and suggests that sialorrhoea is rarely because of obvious oral pathology or haematinic deficiency or undiagnosed maturity onset diabetes (32). Therefore, subjecting a patient to a range of laboratory investigation may be prudent. Therefore, a possible organic basis for this condition should be sought, the clinician should be aware that they are unlikely to uncover this even in the minority of cases and hence should avoid any unnecessary investigative zeal.

A small percentage of patients had prior contact with the psychiatric services, and while not wishing to speculate unduly on this finding (as the study was not designed to address this issue) this may be an important pointer to the aetiology of this symptom when considered in conjunction with the EPQ data. Patients with high levels of neuroticism more frequently present with greater levels of disability, medically unexplained symptoms and pain than do emotionally stable individuals (33).

Whilst it is often unclear whether neuroticism is a cause of a consequence of particular somatic symptoms, sialorrhoea is not likely to be perceived as a symptom of some more serious disorder. We, therefore, suggest that patients presenting with this condition are likely to do so because of their above-average rates of emotional disorder. This increased arousal, with the expected changes in salivary flow which patients subsequently experience, may translate into a complaint of sialorrhoea. In patients who had prior contact with the psychiatric services, scrutiny of case notes at the time showed that the patients also had various orofacial symptoms even at that time.

The higher L (Lie) scores in this group require to be assessed with caution. The L-score was devised to assess to what extent patients are replying to the questionnaire in a manner that accurately described their personality or in a manner which described how they would wish to be viewed. As such, the L-score tends to rise if the patient wishes to paint themselves as 'socially desirable' and to minimize any psychological traits that they feel they would rather not disclose. This finding is in keeping with other studies which have reported that patients with somatic symptoms, whether organically or psychologically determined, tend to minimize any report of psychological distress (34). It could be anticipated that if they did so they would increase their 'L-score' and this is the most likely interpretation of the difference observed in this study.

The symptom of sialorrhoea appears to be uncommon but not a rare complaint. It was found not to have an organic basis and the data suggests that sialorrhoea is associated with high levels of neuroticism and a tendency to dissimulate.

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310

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