

Diagnoses among referrals to a Swedish clinic specialized in temporomandibular disorders

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The purpose was to describe the distribution of diagnoses among all referrals to a clinic specialized in temporomandibular disorders (TMD). A series of 1500 consecutive patients, evaluated by 1 dentist, were diagnosed according to the criteria of *The International Classification of Diseases, 9th Revision, Clinical Modification: ICD-9-CM*. Some referrals (12%) were never evaluated, were symptom-free, or were forwarded to other clinics. Various dental, neurogenic, occlusal, dentofacial, and other problems occurred. Vague orofacial pain was common, as was tension-type headache (6% each). More than 5% of the patients were affected by systemic disorders with manifestations in the temporomandibular joints. About half of all referrals could be strictly diagnosed with TMD. Myalgia was diagnosed as the main complaint in 19%. Internal derangement 'clicking' (15%) and 'closed lock' (6%) were more common than traumatic/unspecified arthritis (6%) or osteoarthritis (5%). A combination of myalgia and clicking appears to be the core sign in patients referred with TMD. □ *Orofacial pain; stomatognathic system*

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The orofacial region can be affected by pain of nociceptive, neurogenic, psychogenic, or unknown etiology. Estimates of the prevalence of the many possible types of non-dental pain show that temporomandibular disorders (TMD) are among the most common (1). TMD have been described as 'a number of clinical problems that involve the masticatory musculature and/or the temporomandibular joint (TMJ)' (2).

TMD are usually categorized into disorders of the masticatory muscles or soft or hard tissues of the TMJ. Several diagnostic systems have been proposed (3–10), but none has been universally accepted. The many systems for classifying TMD differ from each other, and ideas considered relevant for discriminating among subgroups may also change over time. Numerous descriptive investigations of signs and symptoms of TMD in different populations have been published (11–13), and despite the shortcomings of different classification systems, knowledge about the distribution of diagnostic subgroups and their characteristic features is also available (10, 14–18). Information about the distribution of diagnoses in complete clinical series of referrals also exists (19–21), but is less comprehensive.

Clinical experience and the literature thus show that many categories of orofacial pain patients and many problems related to the masticatory system, other than TMD, are often referred to TMD clinics for evaluation. The classification systems referred to above embrace only pure TMD diagnoses. *The International Classification of Diseases, 9th Revision, Clinical Modification: ICD-9-CM* (22) is a comprehensive diagnostic scheme based on a compromise between etiologic, anatomic, and external factors, among others, to classify diseases. This classification system

embraces most pertinent conditions and has been available for many years, having been developed primarily for statistical purposes. A revised version, ICD-10, is now in use.

The aim of this report was to describe the distribution of clinically established diagnoses—made by one examiner—in a large series of referrals to a clinic staffed by a TMD specialist.

Materials and methods

The 1500 patients surveyed were consecutive and evaluated by 1 dentist, a specialist in TMD, during a 4.5-year period. All subjects were new referrals to a TMD clinic in a Swedish county of approximately 320,000 inhabitants, both rural and urban. The referrals came from family and specialist dentists, public and private, and from medical practitioners in the county.

The diagnostic process included a history of the present complaint and a clinical examination of the relevant structures as a minimum. A full history included a detailed survey of pain characteristics and dysfunction, medical history and medication, previous treatment, and psychosocial background. A comprehensive, systematic, clinical examination included assessment of the range and pattern of movement of the mandible, registration of any accompanying pain or joint sounds, and palpation of the TMJs and masticatory and associated muscles along with inspection of the intra- and extraoral structures. When warranted, other diagnostic modalities, including roentgenographic, were used to establish a preliminary diagnosis and a treatment strategy at the time of examination. At the close of each case, the patient was

Table 1. The diagnoses, International Classification of Diseases (ICD) codes, and distribution by number, percentage, sex, and age of 1500 consecutive referrals to a temporomandibular disorder clinic

Diagnosis	ICD code	n	%	Sex (women/men, %)	Age (women/men, years)
Not evaluated/symptom-free	—	140	9.3	—	—
Various, referral forwarded	—	44	2.9	—	—
Tinnitus	388.30	37	2.5	41/59	46/49
Apnea	786.09	19	1.3	47/53	56/53
Bell's palsy	351.0	3	0.2	66/33	37/47
'Occlusal discomfort'	(524.4)	26	1.7	81/19	60/56
Dentofacial anomalies, malocclusion	524.1–3,5	41	2.7	61/39	41/44
Attrition/abrasion/erosion	521.1–3	44	2.9	43/57	40/39
Bruxism	306.8	30	2.0	43/57	26/28
	780.56				
Dislocation	718.28–38	13	0.9	62/38	37/39
Sequel mandibular fractures	524.2	11	0.7	27/73	39/40
	524.6				
Dental pain	522.0–1,5	39	2.6	82/18	44/42
	523.3				
Mucosal pain	697.0	8	0.5	63/37	56/52
	529.6				
Vague orofacial pain	350.2	96	6.4	73/27	48/48
Tension-type headache	307.81	91	6.1	66/33	34/34
Psoriatic arthritis	696.08	12	0.8	58/42	48/42
Ankylosing spondylitis	720.0	7	0.5	71/29	43/52
Systemic lupus erythematosus	710.0	2	0.1	100/0	41/—
Rheumatoid arthritis	714.08	58	3.9	91/9	47/58
Juvenile chronic arthritis	714.38	12	0.8	83/17	16/18
Myalgia	729.18	281	18.7	80/20	37/35
Internal derangement, 'clicking'	718.90	229	15.3	67/33	28/28
Internal derangement, 'closed lock'	718.98	94	6.3	81/19	31/26
Traumatic arthritis	716.18	30	2.0	53/47	35/44
Unspecified monoarthritis	716.98	64	4.3	69/31	48/42
Osteoarthritis	715.18	69	4.6	86/14	56/61
Total		1500	100		

given at least one diagnosis from the ICD-9-CM, if possible. A diagnosis based on the patient's chief complaint was made by the examiner using all available information. Several overlapping diagnoses were possible, but one was considered the main diagnosis. All files were evaluated a second time, in compiling the survey.

Results

The diagnoses, the ICD codes (where possible), and the distribution by number, percentage, sex, and age of the 1500 referrals are shown in Table 1.

Some of the referred subjects did not show up and were never evaluated. Most stated that their symptoms had disappeared when they received the notice to attend; several could not afford the examination charge; and a few could not be reached or failed to come for unknown reasons. In 32 cases the patient was examined but exhibited none of the signs or symptoms that had given rise to the referral and, consequently, was not given a diagnosis.

'Oral galvanism' or presumed allergic reactions to dental materials were the reasons for referral in 9 cases.

After an evaluation of the pain, the presumed diagnoses were found to be related to the ear, nose, and throat area (otitis, sinusitis, dizziness, blocked ears) in 16 patients. One patient was diagnosed with a suspected malignant tumor in the mandible, 1 with an unknown muscle disease, 1 with osteomyelitis, 1 with a suspected cluster headache, 1 with a previously undiagnosed condylar fracture, and 1 with oral dyskinesia of unknown etiology as the reason for the pain and dysfunction that gave rise to the referral. Trigeminal neuralgia was suspected in 8 patients. Five of the patients were diagnosed with suspected migraine. All of these subjects were referred to other clinics for further examination, and the preliminary diagnoses were confirmed there.

The remaining patients were further evaluated or treated at the clinic.

Patients with tinnitus, sleep apnea or snoring, and Bell's palsy were referred after medical evaluation.

'Occlusal discomfort', ranging from difficulties to adapt to new prosthetic constructions to pronounced 'phantom bites', was among the reasons for referral, as were various dentofacial anomalies, malocclusion, severe abrasion, and bruxism not related to pain or discomfort.

Dislocation of the jaw, acute or habitual, and sequel

from mandibular fractures motivated the referral in some cases.

Several patients were referred for pain that, after examination, appeared to be dental (sensitive teeth, pulpal pain, apical abscess, periodontal pain, pericoronitis). The pain emanated from the mucogingival and the glossal structures in a few cases (lichen planus, burning mouth syndrome).

One extensive category of referrals had orofacial pain of diffuse character that could never be given a distinct diagnosis. Atypical odontalgia, atypical facial pain, psychogenic pain, and somatization were among the designations.

Tension-type headache was the presumed diagnosis in many of the cases. Palpatory tenderness in the masticatory muscles was registered in three-quarters of these, but not as the main complaint.

Psoriatic arthritis, ankylosing spondylitis, systemic lupus erythematosus, rheumatoid arthritis, and juvenile chronic arthritis were all medically established diagnoses.

The remaining 767 patients were given 'strict' TMD diagnoses; their main problems were related to the masticatory muscles and/or TMJs and not caused by any known general disease.

The patients were diagnosed with myalgia when aching pain and tiredness in the masticatory muscles during rest and/or function was stated as the main problem and palpatory tenderness, most often bilateral, was registered. Lateral, but not posterior, palpatory tenderness of the TMJs could be present. In 100 of the 281 cases, TMJ 'clicking' was also registered but not stated as the main problem.

TMJ clicking, at least on one side, was stated as the main problem in another category. The clicking was almost always reproducible and often reciprocal, sometimes combined with periodic catching, and in most cases painful. The clinically established diagnosis was thus internal derangement, anterior disc displacement with reduction. In 133 of the 229 cases, palpatory tenderness in the masticatory muscles was also registered, often only unilaterally. In the remaining 96 cases, no muscle tenderness was registered. Non-painful cases occurred; the problem was only a socially disturbing joint noise in a few cases.

A 'closed lock' could also be stated as the main problem: a sudden onset of an inability to open wide and a decreased horizontal mandibular mobility. The clinically established diagnosis was thus internal derangement, anterior disc displacement without reduction. In all of these cases the condition was painful at some stage, and in most it had been preceded by clicking in the TMJ.

Some referrals were diagnosed with traumatic arthritis. Typical symptoms were sudden occurrence of a painful TMJ, particularly during function, decreased mandibular mobility, and tenderness to palpation of the joint, lateral and/or posterior, together with an open bite on the affected side in many cases. The debut was associated with a more or less pronounced trauma.

Unspecified monoarthritis was also diagnosed. Characteristic were pain in a TMJ and posterior palpatory TMJ tenderness, but no history of general disease or trauma and no crepitus. Most patients also had palpatory tenderness in the masticatory muscles, but it was not reported to be the main problem.

A painful TMJ during rest and/or function, associated with crepitus in the joint, was diagnosed as osteoarthritis. In all cases there was tenderness to palpation of the joint, at least posteriorly. The diagnosis was confirmed roentgenographically when evaluated, but this was not performed in all cases for various reasons. All but a few patients also had palpatory tenderness in the masticatory muscles, but this was not the main problem.

The percentage distribution of the different diagnoses in the 767 cases with strict TMD was also calculated. In 233 cases palpatory tenderness in the masticatory muscles and clicking in the TMJ coexisted and were accordingly the prominent problems. This major category thus constituted 30% of all TMD cases; the others were attributed to myalgia only (24%), clicking only (13%), closed lock (12%), osteoarthritis (9%), unspecified monoarthritis (8%), and traumatic arthritis (4%).

Discussion

On the basis of the patient's opinion of the main problem and after a review of the case history and a clinical evaluation of the patient's signs and symptoms, at least one professional diagnosis was made. Reliable tests or biomarkers to identify most of the pertinent categories of orofacial pain, including TMD, are non-existent; only clinical evaluations, with their arbitrary quality, are available (23). The recently developed Research Diagnostic Criteria for TMD (8) have specific, operational criteria for diagnosis to enable comparisons between various clinics. The ICD-9-CM lacks operational criteria to assist in classifying different conditions. That clinical judgements differ from one examiner to another and over time is an inevitable methodological shortcoming. The variability in the evaluations can be reduced, but not eliminated, by using only one examiner (24).

Only slightly more than half of the diagnoses in this series were classified as strict TMD. The remaining cases were distributed about equally among unevaluated or symptom-free cases, occlusal or oral motor problems, pain not related to the TMJ or masticatory muscles, and pain due to a general disease or headache. The variety of diagnoses was remarkable. Many of the conditions are rare, but a correct diagnosis is naturally decisive in each individual case.

A number of subjects declined or did not attend the initial examination. The most frequent reason given was that the problems had resolved spontaneously; an episodic, cyclic course may be characteristic in some cases of TMD (25).

Occlusal problems of various kinds have historically

been considered to belong to TMD and were referred to the clinic even when the solutions obviously were prosthetic, orthodontic, or even surgical. Occlusal therapy has traditionally been applied to many problems in the area, and attitudes regarding treatment strategies are not always identical in general and specialty clinics (26) or even between specialist clinicians (27).

Pain was an outstanding feature in most cases. A few patients were diagnosed with discrete, well-recognized pain conditions of neurogenic origin and a few also with pain of dental origin. The patients in the largest non-TMD category had pain of vague character; a distinct diagnosis was never established. This might be due to the examiner's diagnostic inability, but several of these cases were also evaluated at other clinics (e.g. neurologic), and none of them received any established diagnosis other than vague orofacial pain.

Another large group were referred for evaluation of tension-type headache. Its association with masticatory muscle disorders has been described exhaustively (28–30).

Several patients were referred because of TMJ and masticatory muscle pain and dysfunction of a presumed origin in a general systemic disease, most often rheumatoid arthritis. TMD may naturally coexist with polyarthritis, but the diseases are known to often involve the TMJ at some stage (31–33).

Signs of TMD are common in the general population, and a significant number of subjects, but considerably fewer, are also aware of symptoms (11, 13, 34). There is general agreement that only a small fraction of the symptomatic subjects demand and need treatment (35, 36). A certain number of subjects exhibiting symptoms—the proportion of the total is unknown—are referred to specialty clinics. The yearly referrals in Bohus county represent about 0.1% of the population, and about half were diagnosed with TMD. This percentage is the same in other Swedish counties (personal communication). Most patients with TMD can be treated successfully at primary care sites, particularly since the natural course of TMD is favorable in most cases. One impression is that some patients recover irrespective of therapeutic effort, and some never recover irrespective of therapeutic effort. However, it has been shown that the great majority of patients on waiting lists for stomatognathic treatment do not recover spontaneously even if they have waited several years for treatment (37). It could be surmised that the referrals represent relatively treatment-resistant and advanced cases of TMD.

Myogenic diagnoses and internal derangements were dominant among the TMD cases. Clicking is undeniably a more tangible symptom to the patient than a diffuse muscular or joint pain, and may therefore be a chief complaint. An anterior disc displacement without reduction or a traumatic arthritis might also be a more dramatic condition and give rise to a proportionally larger number of referrals than, for example, myalgia.

While the proportions of diagnoses seem to differ with the classification system and the population studied, the

sex and age distributions in comparable diagnostic categories were remarkably similar, sometimes identical, to those of earlier findings (10, 17).

In summary, a coarse clinical evaluation—with its highly arbitrary quality—of a large series of referrals to a TMD clinic shows a great variety of diagnoses. Pain is the most common reason for referral; vague orofacial pain and tension-type headache are common. Only half of the referrals in this series were diagnosed with strict TMD. Muscular pain in combination with clicking appears, not unexpectedly, to be the core sign and symptom in patients referred because of TMD.

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