

Sounds Produced by the Mandibular Joint in a Sample of Healthy Workers

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A sample of 6718 healthy persons were asked, during an examination in connection with getting a job, whether they had noticed sounds emanating from their temporomandibular joints. A total of 20.1% of the job applicants reported hearing joint sounds. Crepitation or clicking was found in more than 12.2% of the sample on palpation. Auscultatory examination revealed sounds in almost 72.5% of the individuals. When examined with a phonocardiograph, 84% of a randomly selected subgroup demonstrated joint sounds. Considering the frequency with which this symptom occurred in healthy individuals, caution must be exercised in interpreting joint sounds as definite proof of arthropathy.

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Patients with "normal" masticatory function often worry about clicking sounds arising within the temporomandibular joint (TMJ) or the region surrounding it. The majority of the published investigations on the subject deal with patients in clinics or small groups of healthy individuals. The present study investigated a large group of healthy men and women with reference to this symptom to examine its importance. Simple methods of examination, as performed in general practice, and the findings of different investigators were compared.

Materials and Methods

A group of 6740 healthy individuals were examined in the course of a preventive, pre-employment checkup, during which the joints of the jaw were also examined. None of the tested persons complained of pain of any sort in the head region. Individuals with a history of jaw fracture, even when free of any current complaints, were excluded from the series. The remaining 6718 test persons (4610 men and 2108 women; age range = 16 to 46 years) were asked about sounds within their jaw joints.

Joints were palpated on opening and closing, and the movement was auscultated with a stethoscope. In 106 randomly selected individuals, a phonogram was made bilaterally during opening and closing using a common phonocardiograph. The findings concerning the joints were obtained and recorded by two experienced surgeons, who had no knowledge of the phonogram result or any knowledge of the findings of the other two investigators.

Results

Table 1 shows the results of the findings regarding joint sounds as registered by different methods. When questioned about joint sounds, 20.1% of the test persons reported clicking or crepitation sounds. This observation was confirmed by palpation in more than 12.2% of the sample, almost exclusively bilaterally, and 72.5% of the persons had joint sounds on auscultation. Joint sounds were recorded for 84% of the 106 persons randomly selected for phonographic testing.

The symptom of click and/or crepitation was related to the method of investigation (Table 2). All test persons who had crepitation and/or clicking during palpation also had the same sounds in auscultation and demonstrated them phonographically.

A comparison of findings, made by two investigators, of the randomly selected test group shows that a quantitative correlation of the sounds observed in auscultation and palpation is uncertain. The findings of the two investigators were so different that after the conclusion of the study an audiogram was requested to exclude any disturbance of hearing of both investigators. The findings of the two investigators regarding changes on either or both sides of the jaw coincided with the findings in phonogram in 40.2% of the 106 persons tested.

Discussion

Many studies report on the joint sounds in clinic patients or in several groups of patients undergoing an appointed specific treatment, but only a few relatively small studies have investigated "healthy" patients.¹ An enlarged study on healthy young men revealed a large number of persons with TMJ sounds,² but the occurrence of the sounds emitted from the TMJ was generally inconsistent, and there was no numerical agreement as to their occurrence.^{3,4} The presence of the joint sounds may not be a pathognomonic of disease, because the prevalence of TMJ sounds in the asymptomatic population is very high.^{1,2} Greene and Laskin,⁵ in their 10-year study of TMJ sounds, report that other signs and symptoms of active disease usually did not develop.

Gay and Bertolami⁶ find both clinical and empirical evidence suggesting that the "normal" TMJ produces noise during "normal" function. Widmer et al⁷ report that clicking of the jaw joint should no longer be judged to be a sign of deforming

Table 1 Temporomandibular Joint Sounds in Healthy Subjects

Method of observation	No. of patients	Patients with crepitation and/or clicking (%)
Questioning about observed joint sounds	6718	1348 (20.1)
Palpation	6718	818 (12.2)
Auscultation	6718	4830 (71.9)
Phonograms	106	89 (84.0)

Table 2 Number of Patients (%) With Crepitation and/or Clicking

Finding	Method	
	Palpation	Auscultation
No crepitation or clicking at all	5900 (87.8)	1888 (28.1)
Sounds during function	818 (12.2)	4830 (71.9)
crepitation only	122 (1.8)	987 (14.7)
clicking only	137 (2.0)	1020 (15.2)
crepitation and clicking	559 (8.4)	2823 (42.0)

arthropathia or the sequela of pathologic processes within the joints. The results of the present study are in agreement with both these investigations.

Conclusion

The frequency of observation of jaw joint sounds depends on the method of registration. The relative frequency of crepitation or clicking sounds is similar when examining by palpation or auscultation. Clinical findings relating to side and differentiation of intermediate or terminal clicking did not agree to a statistically acceptable degree. The reasons for this need further clarification. The great frequency of sounds in healthy subjects refutes the concept that the sounds are a sign of arthropathy or a general dysfunction.

References

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Resumen

Sonidos Producidos por la Articulación Mandibular en una Muestra de Trabajadores Sanos

Un grupo de 6.718 personas sanas, fué interrogado en relación a la percepción de sonidos en sus articulaciones temporomandibulares, durante un examen de solicitud de trabajo. El 20.1% de los solicitantes reportaron la ocurrencia de sonidos en las articulaciones. Los sonidos de crepitación y de click se encontraron en un 12.2% de la muestra al efectuarse una palpación. El examen auscultatorio reveló la ocurrencia de sonidos en el 72.3% de los individuos observados. En un subgrupo seleccionado al azar, el 84% de las personas presentaron sonidos en la articulación cuando fueron examinados con un fonocardiografo. Considerando la frecuencia con que ocurre el sintoma denominado "sonidos en la articulación" en individuos sanos, es una situación difícil de evaluar.

Zusammenfassung

Kiefergelenkgeräusche — eine Reihenuntersuchung bei gesunden Mitarbeitern

Mehr als 6000 "gesunde" Männer und Frauen wurden zu Gelenkgeräuschen im Rahmen der arbeitsmedizinischen Vorsorgeuntersuchungen befragt und anschließend untersucht. Etwa 20% der Untersuchten berichteten, irgendwann einmal Gelenkgeräusche bemerkt zu haben. Palpatorisch fanden sich bei mehr als 10% Geräusche, auskultatorisch bei nahezu 70%. Eine kleine Gruppe zeigte phonographisch bei mehr als 80% der Probanden Geräusche. Die Wertung des in der Praxis sehr wichtigen Symptoms "Kiefergelenkgeräusche" scheint in Anbetracht des häufigen Vorkommens bei "Gesunden" nicht leicht.
