



Tennis elbow: associated psychological factors

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Background: The etiology of tennis elbow is multifactorial. Overuse of the wrist extensors along with anatomic factors, such as flexibility problems, aging, and poor blood circulation, may play a role. This study investigated whether patients with tennis elbow have a different psychological profile compared with healthy controls.

Methods: Patients with clinical signs of tennis elbow, consulting at the Ghent University Hospital between September 2015 and January 2017, were offered a paper-and-pencil questionnaire about Big Five personality traits, perfectionism, anxiety, depression, work satisfaction, and working conditions. Healthy controls in the same risk group were offered the same questionnaires.

Results: We recruited 69 patients (35 men, 34 women) and 100 controls (44 men, 56 women). Tennis elbow patients scored significantly lower on the personality traits extraversion and agreeableness. Men, in particular, scored significantly higher on perfectionism and were more likely to develop an anxiety disorder or a depression. Concerning work, patients indicated a significantly higher workload (especially men) and a significantly lower autonomy (especially women). Female patients also indicated less contact with colleagues. However, work satisfaction was relatively high in both groups.

Conclusion: The results suggest that there is a relationship between complaints related to tennis elbow and psychological characteristics.

Level of evidence: Level III; Case-Control Design; Prognosis Study

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Tennis elbow is a painful condition of the extensor tendons in the dorsal forearm, which attach at the lateral epicondyle

of the humerus. The extensor carpi radialis brevis muscle is the affected tendon in almost 90% of cases.^{2,9} It is a frequent cause of elbow pain, with an annual incidence of 10 to 30 cases per 1000 adults and a peak incidence between the ages of 35 and 55 years. In most cases, the diagnosis of lateral epicondylitis can be made clinically. However, further investigations may be required when the diagnosis is less clear.^{1,4,10,18} Because the condition is common at an age when individuals are professionally active, it has become an

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important cause of (mostly prolonged) absenteeism. Therefore, tennis elbow has a big economic impact.^{13,15}

Multiple factors may play a role in the etiology of tennis elbow. These factors include overuse of the wrist extensors, typically caused by repetitive movements of the forearm or by heavy lifting. Some anatomic factors, such as flexibility problems, aging, and poor blood circulation, could favor the development of the injury.^{6,9,17,19}

The condition is mostly self-limiting within the year, but several conservative therapies are available, including physiotherapy, bracing, oral medication, or injections. If conservative treatment is unsuccessful after 6 to 12 months, surgery can be proposed.^{10,11,14} Despite all of the therapeutic options, there is still no standardized protocol for treating tennis elbow and there is still insufficient evidence of the efficacy for each of the proposed conservative treatments.

Whether conservative treatments offer any long-term benefit compared with watchful waiting remains unclear. Most of these treatments are therefore simply observational and based on a wait-and-see management. Although the results in the literature seem to be good, the indications for surgery are not well described, and evidence is lacking to prefer a specific surgical technique. Up to 20% continue to experience significant complaints postoperatively despite several treatment attempts, which cannot be ignored.^{10-12,14,18}

The lack of evidence of an effective treatment for tennis elbow suggests that there is need for more research in the etiology of tennis elbow and the factors that are negatively associated with the therapeutic success. The aim of the study was to find out whether psychological factors play a role in the etiology of tennis elbow and whether patients who come for treatment to the hospital have a specific psychological profile.

Materials and methods

Study design

The study design was a prospective case-control study.

Study sample

Patients

The study sample consisted of patients with clinical signs of tennis elbow consulting at the Ghent University Hospital between September 2015 and January 2017. The diagnosis of tennis elbow was made on clinical grounds: pain at the lateral epicondyle or just distally of it for at least 6 weeks and a painful resisted dorsiflexion of the wrist (more painful with the elbow in extension than with the elbow in flexion). Exclusion criteria were pain at the mobile wad (brachioradialis muscle, extensor carpi radialis brevis muscle, and extensor carpi radialis longus muscle), loss of passive range of motion, crepitus during pronation and supination at the soft spot, and pain at the wrist, neck, or shoulder. Included were 69 patients (34 men and 35 women) with tennis elbow, with a mean age of 47 years (range, 26-64 years).

Table I Distribution of professions

| Profession | Patients | | Controls | |
|----------------------------|----------|-----|----------|-----|
| | % | No. | % | No. |
| Construction worker | 33.3 | 23 | 28 | 28 |
| Cleaning helper | 18.8 | 13 | 19 | 19 |
| Office work | 11.6 | 8 | 11 | 11 |
| Warehouse/stockroom worker | 10.1 | 7 | 24 | 24 |
| Factory worker | 10.1 | 7 | — | — |
| Nurse | 7.2 | 5 | 18 | 18 |
| Mechanic | 4.3 | 3 | — | — |
| Retired | 4.3 | 3 | — | — |
| Total | 100 | 69 | 100 | 100 |

Table II Employment in the last 6 months

| Employment | Patients | | Controls | |
|-------------|----------|-----|----------|-----|
| | % | No. | % | No. |
| Full-time | 50.7 | 35 | 79 | 79 |
| Part-time | 30.4 | 21 | 21 | 21 |
| Not working | 18.8 | 13 | — | — |

Controls

The control group consisted of people with no tennis elbow but who belonged to the same risk group (same age category and same professions). The age range and the professions of the patient population were used to recruit the control group participants (Tables I and II). Questionnaires were distributed in warehouses, stockrooms, factories, construction yards, cleaning companies, and health care facilities, such as hospitals and retirement homes, to reach the control persons. The inclusion criterion was an age between 30 and 65 years and the exclusion criteria were having a tennis elbow at the moment of interrogation or a history of tennis elbow. In total, 100 healthy controls (44 men and 56 women), with a mean age of 45 years (range, 30-62), were recruited.

Instruments

A paper-and-pencil questionnaire was administered to determine the psychological profile of tennis elbow patients.

The Big Five personality traits (openness, conscientiousness, extraversion, agreeableness, and emotional stability) were assessed with the Dutch version of the Ten-Item Personality Inventory, with 2 items for each personality trait.⁸ The items were answered on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Perfectionism was investigated by means of the Dutch version of the Frost Multidimensional Perfectionism Scale, consisting of 10 items, 6 items for positive perfectionism (eg, "I try to be an organized person") and 4 items for negative perfectionism (eg, "If I don't set the bar high for myself, chances are that I end up as a second class person").⁷ The items were answered on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree).

Anxiety and depression were assessed by the Dutch version of the Hospital Anxiety and Depression Scale,³ which contains 14 items, 7 items for anxiety and 7 for depression, each rated from 0 to 3.

Questions about work satisfaction and working conditions were asked, which only needed to be answered if the patient had been

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