
Design: Observational cohort study

Population/sample size/setting:
- 700 workers who had participated in a longitudinal study of upper extremity disorders in 1993 in France; 598 (178 men, 420 women) of these were followed up in 1996, together with 337 workers who did not perform repetitive work
- The goal of the study was to evaluate personal and occupational factors which predicted incidence of upper extremity conditions in the 3 year interval between 1993 and 1996
- Eligible workers were classed as exposed to repetitive work in one of 5 activity sectors: assembly line manufacture, clothing or shoe industry, food industry, packaging, and supermarket cashiering
- The 598 workers who participated in the 1996 follow-up completed a self-administered questionnaire and were examined by an occupational health physician, who performed a standardized clinical examination at the beginning of the study and again at the 3 year follow-up, using a list or criteria for the diagnoses of diagnosis of upper extremity conditions

Main outcome measures:
- Diagnosis of medial epicondylitis (ME) was based on pain at the medial epicondyle, or medial epicondyle tenderness and pain on resisted pronation or elbow flexion
- Two analyses were done: one based on prevalence at the start of the study, and one based on incidence during the three years of the study
- Job duties assessed in questionnaire included “holding in position,” “turning and screwing,” forceful work, and repetition (yes or no)
- There were 68 cases of ME at the start of the study; no association was observed between repetition and ME, but the odds ratio was elevated for forceful work (OR=1.95)
- During the three year follow-up there were 25 new cases of ME, for an estimated annual incidence rate of 1.8%
- For incident cases of ME, force was not a risk factor; however, the presence of another upper extremity problem (CTS, shoulder tendonitis, lateral epicondylitis, or ulnar nerve entrapment at the elbow) yielded an increased risk (Relative risk=2.54) of ME during the 3 year follow-up
- The rate of recovery from ME was very high (81% in 3 years); recovery was not associated with a change in working conditions

Authors’ conclusions:
- ME is not associated with repetitive work, but may be associated with forceful work, and occurs frequently when other upper extremity conditions are present
The lack of association between biomechanical factors and ME may have been due to a lack of power, or may have been due to the long time interval between the two evaluations of the workers.

Comments:
- There were 19 subjects with both medial and lateral epicondylitis who were excluded from the logistic regression model used to assess the risk factors; when there were only 49 cases of ME (rather than all 68 cases) entered into the model, the power of the study was likely to have been eroded further.
- With only 25 incident cases of ME during the 3 year follow-up, the power of any logistic model to detect risk factors is likely to be weak.
- Questionnaire assessment of exposure is difficult to interpret, since the direction of potential bias is not easy to predict.
- Because the study was done in an industrial setting, it is likely that the exposures occurred for 6 hours per day or more.

Assessment: Adequate for a statement that forceful exertion is associated with ME.