Long-term effects of biomechanical exposure on severe shoulder pain in the Gazel cohort

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OBJECTIVE: We aimed to assess whether the risk factors for severe shoulder pain, especially exposure to arm elevation, were still relevant after a 12-year follow-up, even following retirement.

METHODS: All men participating in the ARPEGE ancillary study of the GAZEL cohort (followed-up since 1989) and who answered the 1994 or 1995 general GAZEL self-administered questionnaire were included. Weight and self-reported exposure (arm elevation >90° with and without carrying loads) over the entire working life were collected at baseline (1994-1995). Shoulder pain and its intensity were recorded in 1994-1995 and again in 2006. Shoulder pain was measured on an intensity or discomfort 6-point scale in 1994-1995 and on an 8-point scale in 2006. Severe shoulder pain was defined as point-rated higher than the mid-points (>3/6 in 1994-1995 and >4/8 in 2006) while moderate pain was lower or equal to these thresholds.

RESULTS: At baseline, 1786 47-51-year-old men were included. In 1994-1995, moderate pain was observed among 8.5% (N=151) of men and severe shoulder pain among 14.6% (N=261). Exposure to arm elevation >90° while carrying loads was significantly associated with severe shoulder pain with >25 years of exposure [adjusted odds ratio (OR (adj)) 4.2, 95% confidence interval (95% CI) 1.7-10.5], taking into account age, sports, smoking habits, history of shoulder trauma, and body mass index. In 2006, when most of the subjects had retired, 1482 men (83.0%) answered the questionnaire, 17.3% of them with severe shoulder pain; the association between exposure to arm elevation >90° while carrying loads and severe shoulder pain was still significant (ORadj 3.3, 95% CI 1.3-8.0), and remained so when subjects with shoulder pain at baseline were excluded.

CONCLUSIONS: Among men, the effect of high shoulder exposure (arm elevation >90° while carrying loads) during working life on severe shoulder pain remains even after retirement. Extended surveillance and prevention should be offered to these workers.

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