

CORRESPONDENCE

Follow-up study of the benefits of hormone replacement therapy on isometric muscle strength of adductor pollicis in postmenopausal women

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We have previously shown in a randomized open trial of Prempak C 0.625[®] versus no treatment that adductor pollicis (AP) muscle strength increased in the treated group over 39–52 weeks [1]. Those who were weakest at the start of the trial benefited most, and the benefit occurred in the absence of any commensurate change in muscle size [1]. We have now tested whether this increased strength relative to the control group is maintained by re-measuring a representative sample of the subjects 2–4 years after they had originally taken part in the trial.

Of the 87 subjects who completed the original trial, 72 agreed to take part. These subjects gave written informed consent for the follow-up study, which had been approved by the UCL/UCLH ethical committee. Five of these 72 were excluded on the basis of the original criteria, which they had developed since the end of the trial, 12 more of the original control group were excluded because they had taken hormone replacement therapy (HRT) for variable periods of time since the completion of the trial. Of the remaining 55 subjects, 25 women had previously been randomized to be controls and 30 to take HRT. Of these 30, 11 subjects had continued HRT treatment until follow-up. The 55 subjects used in the follow-up study were representative of the whole group who had completed the original trial in terms of age (60.4 ± 0.4 years versus 60.8 ± 0.3 years; means \pm S.E.M.) and original AP muscle strength (59.5 ± 1.2 N versus 58.5 ± 0.8 N). The new observations were made over a period of 5 months, and consisted of measuring maximum voluntary force (MVF) and cross-sectional area (CSA) of AP as previously described [2,3], but using, for the force measurements, new equipment with minor mechanical design changes. The follow-up observations were also made by a different observer. The results show a larger

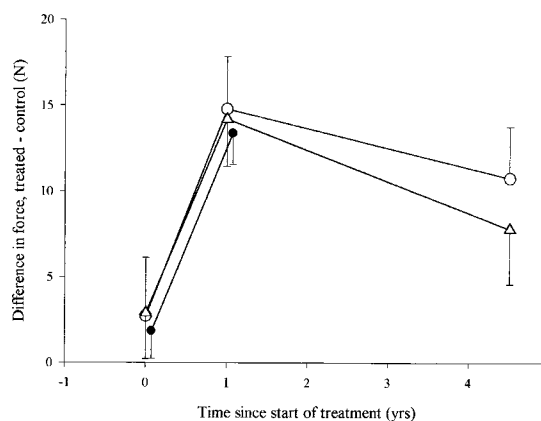


Figure 1 Benefit of HRT on AP muscle strength at 1 year and at 3.5 years

Data are differences between the mean MVF of treated versus control groups. The error bars show means \pm S. E. M. (●) Results from the original study [1], offset slightly to the right for clarity; (○) subjects who continued HRT throughout the 4.5 year period; and (△) subjects who had discontinued HRT on average 1.7 years before the final measurement.

than expected fall in absolute MVF for both control and treated groups since the end of the study. We cannot be certain of the extent to which the change in equipment and observer may have contributed to this apparent decline in absolute force. For this reason, we have analysed the data in terms of the differences between the control and HRT groups, which cannot be influenced by these uncertainties.

CSA showed no significant change in any of the groups during the follow-up period, and there were no significant differences between the groups. Figure 1 shows the differences in MVF between those HRT users who had

Key words: adductor pollicis, aging, oestrogen, post-menopausal.

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continued treatment and the controls, both at the start and end of the original trial and 3.5 years later (open circles). Most of the difference in muscle strength seen at the end of the trial persisted during the subsequent 3.5 years. This benefit at 3.5 years amounted to 73% of that at the end of the original trial (5% confidence limits, 28–117%). The Figure also confirms that this group is representative by comparing their benefit at the end of the trial (14.8 ± 3.1 N, means \pm S.E.M.) with that in the larger group (filled circles; 39 HRT and 48 controls) who completed the original study (13.39 ± 1.83 N). There is no significant difference at the start or end of the trial between the original groups and the samples used for the follow-up ($P > 0.6$).

The open triangles (Figure 1) show results for the 19 subjects who had previously been in the intervention group, but who had since stopped taking HRT, on average 1.7 years prior to this follow-up. In this group, the mean benefit remaining is 55% of that at the end of the trial (confidence limits 7–103%). There is no significant difference between the force at follow-up of

those who continued HRT compared with those who had stopped treatment ($P = 0.405$, unpaired t test).

This follow-up has shown that the benefit of HRT on AP muscle strength compared with a control group was maintained in those who continued treatment beyond 1 year, although no further increase in muscle strength was found. At least some benefit of HRT on muscle strength remains for several years in those who discontinue it after 1 year or more of treatment.

REFERENCES

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Received 26 May 2000/11 December 2000