HORMONE REPLACEMENT THERAPY REVERSES AGE-RELATED IMPAIRED WOUND HEALING

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We have previously shown that ageing impairs the rate of wound healing (Ashcroft et al. Lancet, submitted) in post-menopausal females, however the influence of sex steroids on the process of repair is unknown. This study has assessed the effects of HRT on wound repair in 10 health-status defined post-menopausal females (SENIEUR protocol) on no medication, compared to 10 post-menopausal females on oestrogen/progesterone replacement for over 6 months, and 10 healthy females aged 20-39yrs. Each subject underwent two 4mm punch biopsies from the upper inner arm, and five subjects from each group had wound excisions at day 7, and five at 3 months post-wounding. The rate and quality of repair were assessed using histological, immunocytochemical and molecular techniques. The rate of wound healing in the post-menopausal females on no medication was delayed compared to the young females in terms of basement membrane deposition, matrix collagen appearance, and macrophage/lymphocyte infiltration, with an up-regulation of proteases in normal skin and within the wounds (using quantitative RT-PCR and zymography). Surprisingly, the quality of scarring was superior in the aged both microscopically and macroscopically. By contrast, the rate and quality of repair, and protease profiles, were similar in the aged females on HRT to those of the young females. These results suggest that the hormonal profile may influence both the rate and quality of wound repair, with HRT stimulating the rate of repair but associated with an inferior scarring quality.

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