

The action of nitrates to relax smooth muscle in blood vessels seems well established, and I attributed the rapid response in my patients to retinal-artery dilation.* The possible interaction of the nitrates with smooth-muscle cells to inhibit platelet aggregation could be providing additional protection for my patient, though he is also taking platelet-inhibitory medication.

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*DiPalma JR. Anti anginal drugs. In: DiPalma JR, DiGregorio GJ. Basic pharmacology in medicine. 3rd ed. New York: McGraw-Hill, 1990:385-7.

HANDEDNESS AND LIFE SPAN

To the Editor: Observations that the proportion of left-handers in the population decreases substantially with age (diminishing from 13 percent in 20-year-olds to less than 1 percent in 80-year-olds^{1,2}) have led to the suggestion that sinistrality may be associated with decreased life span. Such an idea is rendered more plausible by the fact that left-handedness is more prevalent in groups at high risk (e.g., those with histories of birth stress,³ immune deficiencies,^{4,5} or frequent accident-related injuries⁶). Reduced longevity in left-handers was more clearly demonstrated in an archival study that examined records on 2271 major-league baseball players. The results suggested that after the age of 33, the chance that a left-hander would die in any given year was 1 to 2 percent higher than the chance that a right-hander would die.⁷

In order to test the relation between handedness and life span in a general population, we obtained death certificates from two counties in southern California. Two thousand questionnaires concerning the handedness of the deceased family member were sent to the listed next of kin, which resulted in 987 usable cases (495 male subjects and 492 female subjects). Subjects were designated as right-handers if they wrote, drew, and threw a ball with the right hand. All other subjects (left-handers and mixed-handers) were assigned to a non-right-handed group.

The mean ages at death for right- and left-handed male and female subjects are shown in Figure 1. There is a 6-year advantage for women in longevity (77 years for female subjects vs. 71 years for male subjects), which is consistent with the usual actuarial predictions of life span as a function of sex ($F_{1,945} = 37.44, P < 0.0001$).

When we turn to the effect of handedness on life span, the results are striking in their magnitude. The mean age at death in the right-handed sample was 75 years, as compared with a mean age at death of 66 years in the left-handers. This nine-year reduction in life span for the left-handers is significant ($F_{1,945} = 22.36, P < 0.0001$). Data on the cause of death were analyzed separately for accidental and medical causes, since there are data to indicate that left-handers are more susceptible to accident-related injuries.⁶ As expected, significantly more left-handers than right-handers died in accidents (7.9 vs. 1.5 percent, $z = 3.81, P < 0.001$), with a relative risk of 5.7 (95

percent confidence interval, 2.1 to 15.4). Furthermore, as predicted by previous research, left-handers were more likely to die of injuries sustained in accidents while driving a vehicle (5.3 vs. 1.4 percent, $z = 2.53, P < 0.05$), corresponding to a relative risk of 4.0 (95 percent confidence interval, 1.3 to 12.7).

These results are consistent with predictions based on implied pathological factors and environmental interactions, suggesting that left-handers are at greater risk of death at any given age. It is important to note that we are not implying that using one's left hand causes a risk of earlier death. It is likely that the correlates of sinistrality, not sinistrality itself, are responsible for the increased risk. Thus, left-handedness may indicate covert neuropathologic features (perhaps sequelae from prenatal and perinatal complications) or immune-system dysfunction. The behavioral aspect of left-handedness only comes into play when one considers the interactions between left-handed persons and the technological environment, which may increase susceptibility to accident, thus raising the level of risk.

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LAW-MEDICINE NOTES

SCIENTIFIC AND COMMERCIAL DEVELOPMENT OF HUMAN CELL LINES

Issues of Property, Ethics, and Conflict of Interest

WILLIAM J. CURRAN, J.D., LL.M., S.M.HYG.

MUCH has been written in recent years about the property interests of patients in commercial products developed from human cell lines.¹⁻⁴ Most of these commentaries have been rendered obsolete by a recent ruling of the Supreme Court of California. In a long-awaited decision in *Moore v. Regents of the University of*

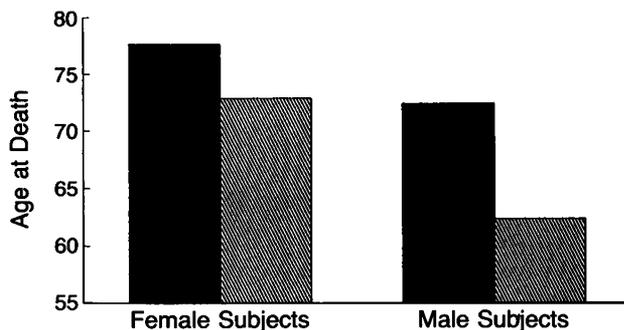


Figure 1. Age at Death as a Function of Handedness and Sex. The solid bars indicate right-handers, and the hatched bars left-handers and mixed-handers.