

SUMMARY

The resistance of both male and female mice to an acute infection by type I pneumococci varied rhythmically in a 24-hour cycle. Mice inoculated intraperitoneally with $10^{5.4 \pm 0.1}$ organisms during the dark period of the daily cycle survived significantly longer than mice inoculated during the light period. The variation has been related to the rate of increase in bacteremia, it being greatest after light phase inoculation. Neither the capacity of blood to support growth of and to opsonize pneumococci nor clearance of pneumococci from the blood in vivo varied in relation to the time of determination.

Removal of the adrenal glands abolished the rhythm. Adrenalectomized mice were equally and highly susceptible to type I pneumococcal infection during both light and dark periods.

Stress of the mice during the light period, an inactive period of normal mice, disturbed the rhythm. Resistance to infection during the light period increased and equalled that during the dark period.

Resistance of mice to large doses of highly virulent type III pneumococci and type 14 streptococci did not vary in relation to time of day.

BIOGRAPHY

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