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With age spontaneous baroreflex sensitivity diminishes after acute fat ingestion

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Baroreflex sensitivity (BRS) is a marker of circulatory autonomic control⁽¹⁾ and shown to be attenuated in smokers^(2,3). Previous studies found that acute fat ingestion had no effect on BRS⁽⁴⁾. However, the effect of fat ingestion on spontaneous BRS as age increases remains unclear and this was investigated in the current study.

30 male smokers aged 19 to 45 years of age were recruited for a randomised, placebo-controlled crossover designed study. A tonometer was used to average three 30-second radial pulse wave form tracings, four hours after subjects ingesting 50 ml of whipping cream containing 50 g of fat (high fat) or 50 ml of milk containing 5 g of fat (low fat). Variations in beat-to-beat values of systolic blood pressure (SBP) and pulse interval (PI) were analysed to acquire an estimate of spontaneous BRS and cardiac parasympathetic activity.

Group analysis showed that cream increased SBP by 2 mmHg and decreased PI by 29 ms ($P < 0.05$), but BRS and cardiac parasympathetic activity remained unchanged. A further analysis was conducted by plotting age against BRS to assess the effect of fat. In the low fat group, no linear correlation was found between age and BRS ($r = +0.08$, $P = 0.70$; Pearson correlation coefficient) and cardiac parasympathetic activity ($r = +0.38$, $P = 0.08$). In contrast, in the high fat group, a negative linear correlation existed between BRS and age ($r = -0.45$, $P = 0.02$), but not between cardiac parasympathetic activity and age ($r = +0.25$, $P = 0.22$).

In male smokers *per se*, the acute ingestion of fat has minor effects on the cardiovascular system. Moreover, sub-analysis may imply that with age, the ingestion of high fat may markedly reduce BRS and impair short-term autonomic control of blood pressure.

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