LETTERS TO THE EDITOR

Plasma catecholamine concentrations in acute states of stress and trauma

Sir

Plasma catecholamine concentrations may provide an index of sympathoadrenal activity, plasma noradrenaline reflecting 'spill-over' from sympathetic nerve terminals, plasma adrenaline arising from the adrenal medulla (Cryer, 1980). However, it is not clear how useful such measurements might be clinically. We have measured plasma catecholamine concentrations in volunteers and patients in a variety of acute 'stressful' and 'traumatic' conditions as part of our studies on metabolic and physiological control in such states (Table 1). In these studies the overall concentration ranges of noradrenaline (0.21-213 nmol/l) and adrenaline (0.03-230 nmol/l) covered more than three orders of magnitude, enabling us to look at relationships with 'severity' of the condition over a very wide spectrum. The estimations were made by HPLC with electrochemical detection after preparation on cation-exchange resin and alumina (Frayn & Maycock, 1983).

Venepuncture alone significantly elevated concentrations of both noradrenaline (NA) and adrenaline (A). In patients with post-operative sepsis, levels were increased, and similar to those in patients soon after minor and moderate injuries. After severe injuries

Table 1

Condition	Sample route	n	NA nmol/l	A nmol/l	DA nmol/l	48-h mortality %
Control	IL	7	0.6 ± 0.1	0.28 ± 0.05	0.08 ± 0.04	0
Blood donation (500 ml)	IL	7	1.2 ± 0.1	0.23 ± 0.04	—	0
Control	V	12	2.1 ± 0.2	0.39 ± 0.07	0.10 ± 0.02	0
Surgical sepsis (score 2-20)*	IL	9	3.3 ± 0.8	0.82 ± 0.43	0.35 ± 0.23	0
Minor/moderate injury (ISS 3-12)**	V	18	3.4 ± 0.3	0.96 ± 0.19	0.27 ± 0.06	0
Severe injury (ISS 14-50)	V/IL	22	13.3 ± 4.4	13.4 ± 6.0	1.17 ± 0.32	36
Accidental hypothermia (T _c 24.0-34.2°C)	V	24	14.3 ± 2.0	5.20 ± 1.64	2.59 ± 0.56	35
Myocardial infarction	V/IL	52	7.5 ± 1.0	1.64 ± 0.31	0.56 ± 0.15	0
MI preceding arrest	V/IL	7	33.3 ± 15.7	20.6 ± 11.8	2.39 ± 1.16	71
Cardiac arrest	V	50	40.0 ± 6.0	29.3 ± 5.6	4.28 ± 1.51	86

*Elebute & Stoner (1983) **ISS = Injury Severity Score. IL = sample through indwelling line; V = sample by direct venepuncture. Results are shown as mean ± SE for simplicity although distributions are more closely log-normal.

levels were higher still, and greater than those in patients with acute myocardial infarction. In a small group of patients with myocardial infarction from whom samples were obtained shortly before (< 30 min) cardiac arrest, still higher levels were seen. The highest levels were found in patients in cardiac arrest. Plasma dopamine (DA) concentrations generally followed those of NA and A.

Within each group there tended to be a relationship between catecholamine concentrations and severity of the stress/trauma measured by independent means, e.g. with Injury Severity Score (Baker *et al.*, 1974) after injury, or with sepsis score (Elebute & Stoner, 1983) in the surgical patients. There were some differences between the conditions in the extent to which the different amines responded, e.g. the elevated A response to severe injury compared with that after accidental hypothermia, perhaps reflecting different afferent stimuli.

We conclude that the elevation of plasma catecholamine concentrations seen in various acute states of stress and trauma broadly reflects the expected sympathoadrenal activity, and might even be useful in 'grading' different states on a common severity scale.

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AIDS and the accident and emergency department

Sir

A 35-year-old man presented to the Accident and Emergency Department of Edinburgh Royal Infirmary in April 1984, complaining of cough, productive of purulent sputum, and intermittent haemoptysis for the previous week. On further questioning, he admitted to a 3-month history of night sweats, intermittent 'fevers' and weight loss of 6.5 kg. His past history included repair of an inguinal hernia, an avulsion of an ingrowing toe-nail, together with attendance at a sexually transmitted diseases clinic in another city.

For 10 years, he had been a practising homosexual, averaging two new partners each week. He had used nitrite drugs and had practised oral and anal intercourse. At the time of presentation he was itinerant, but had been working as a cook.