Udenfriend[6]. 1 unit of DBH is the amount of enzyme catalyzing the oxidation of 1 μmole of tyramine to octopamine, in 1 min incubation at 37 °C. The blood samples taken before and after treatment were processed and analyzed simultaneously.

Results. DBH activity values before and after ECT were similar: when plotted one against the other, a straight regression line with a slope of 45° resulted (figure). In the few patients examined more than once, the changes in DBH levels from one ECT to the next were small and not consistent in direction.

Discussion. Our results show that ECT does not elevate DBH activity in the blood, and presumably does not increase sympathetic tone. Most of our patients have been treated with drugs when the ECT were performed. It seems unlikely that these drugs could inhibit sympathetic activation. The 2 patients who were not receiving any drugs also have not demonstrated any elevation of DBH activity after any of the 4 individual ECT sessions. There is ample evidence that ECT increases noradrenergic activity within the central nervous system[4]. Our results suggest that this activation does not occur in the periphery. By analogy, it may be concluded that spontaneous grand-mal seizures do not activate sympathetic pathways directly. This may be due to the fact that cardiovascular control is exerted by structures low in the brain stem, at least in the unconscious state. On the other hand, respiratory function is affected by both spontaneous grand-mal seizures and ECT. The reason for the relative vulnerability of the respiratory control system is not clear. In any case, whenever breathing is affected, sympathetic tone may be changed secondarily.

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Effect of preoperative stress on serum cholesterol level in humans

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Summary. Effect of preoperative stress on serum cholesterol level in 65 patients of different age groups in a surgical ward, has been studied. In all age groups, statistically significant rise of cholesterol in serum preoperatively was noticed as compared with serum cholesterol level at the time of discharge from hospital. The preoperative rise of cholesterol varied from 39 to 56.9% in this series. These findings support previous reports of the effect of mental tension on serum cholesterol level.

Chronic exposure of man to various emotional stressors leads to increased plasma concentration of cholesterol[2–8]. Selye[9] has described a biphasic response of serum cholesterol and lipids in his general adaptation syndrome. Beischer[10] failed to find any significant change in serum cholesterol, phospholipids, and lipoproteins following the subject's first experience of human centrifuge ride, or the experience of simulated failure of low pressure chamber. Mann and White[11] concluded that experimental stress resulted in lowering of blood cholesterol in dogs and rats. Carlson et al.[12] observed increase in plasma-free fatty acids and relatively lesser alterations in cholesterol, and phospholipids in men during experimentally induced emotional stress. Kyle et al.[13] observed lowering of serum cholesterol levels post-operatively as compared with their control values. In view of these observed discrepancies in serum cholesterol values in response to mental tension, it was of interest to study the serum cholesterol levels in patients subjected to preoperative (i.e. psychological) stress.

Material and methods. Subjects selected for preoperative stress investigation were from surgical wards. Patients suspected clinically of lipid-cholesterol metabolic disorders and confirmed by biochemical investigations were discarded. Subjects were classified into 5 groups according to their age. Group A comprized of patients age 11–20, group B of age 21–30, group C of age 31–40, group D of age 41–50, and group E of age 51–60. For each patient, serum cholesterol was estimated on 4 occasions. 1. On the day of admission (morning fasting sample between 08.30 and 09.00 h). 2. On the day of operation just before adminis tering anaesthesia. 3. Postoperatively after the effect of anaesthesia is over (usually between 16.0 and 16.30 h). 4. On the day of discharge (morning fasting sample between 08.30 and 09.00 h).

No anti-stress drugs were administered. Atropine was given to patients who were operated under general anaesthesia. Total cholesterol was determined according to method of Zak[14]. Means and standard error were calculated and results were compared for statistical significance by means of paired 't' test.

Results. The results recorded in the tables clearly indicate a definite pattern, such as rise of serum cholesterol, right from the day of admission, reaching its peak preoperatively, i.e. on the day of operation, falling to a lower level post-operatively and reaching the minimum on the day of discharge. Preoperative rise of cholesterol in all age groups is statistically significant. Percentage rise

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Effect of preoperative stress on serum cholesterol in surgical patients

Age group and number of subjects	Serum cholesterol in mg (%) On admission (O. A.)	Pre-operative (Pre. op.)	Post-operative (p. o.)	On discharge (O. D.)
A 11–20 years (n = 7)	152.8 ± 12.7	177.14 ± 13.57	148.85 ± 7.39	123.71 ± 8.25
B 21–30 years (n = 30)	151.33 ± 7.35	178.60 ± 8.96	155.10 ± 7.93	127.66 ± 6.42
C 31–40 years (n = 14)	159.21 ± 13.22	182.93 ± 15.91	153.93 ± 12.51	130.93 ± 9.98
D 41–50 years (n = 9)	157.22 ± 12.21	192.11 ± 12.87	163.77 ± 12.96	122.44 ± 12.27
E 51–60 years (n = 5)	140.8 ± 20.2	176.2 ± 17.75	134.6 ± 15.96	122.8 ± 21.4

Statistical analysis (Paired t-t test)
Mean values ± SE.

Age gr.	O.D. vs. O.A.	O.D. vs. Pre.op.	O.A. vs. Pre.op.	Pre.op. vs. P.O.	O.D. vs. P.O.
A	t=3.86 p<0.01**	t=5.257 p<0.01**	t=3.37 p<0.05*	t=2.44 p<0.05*	t=3.73 p<0.01**
B	t=5.49 p<0.001***	t=7.54 p<0.001***	t=12.44 p<0.001***	t=6.23 p<0.001***	t=6.69 p<0.001***
C	t = 3.83 p<0.01**	t = 5.68 p<0.001***	t=4.8 p<0.001***	t=4.93 p<0.001***	t=5.35 p<0.001***
D	t=4.05 p<0.01**	t=8.30 p<0.001***	t=5.2 p<0.001***	t=4.81 p<0.01**	t=4.9 p<0.01**
E	t=1.67 p<1 NS	t=4.98 p<0.01**	t=3.24 p<0.05*	t=4.07 p<0.05*	t=2.92 p<0.05*

NS = not significant; *significant; **very significant; ***highly significant.

of serum cholesterol level was 43.5, 39.9, 39.0, 56.9 and 43.4 in age groups A, B, C, D, E respectively. Examination of results also indicates rise of serum cholesterol level on the day of admission as compared with that on the day of discharge in all age groups except group E. Post-operatively there is a consistant fall in serum cholesterol level although it is still significantly higher than that on the day of discharge. Cholesterol level at the time of discharge from hospital served as control value.

Discussion. Examination of serum cholesterol level at the time of discharge for all age groups in this series reveals low values. Observed low serum cholesterol levels can be attributed to the fact that majority of patients attending Civil Hospital for treatment purposes belonged to low socioeconomic group. Patients were found to be mainly vegetarian and subsisting on low dietary cholesterol intake. Elevated serum cholesterol levels on the day of admission as compared with that on the day of discharge indicate the traumatic effect of hospitalization. Statistically insignificant rise of cholesterol in group E on the day of admission as compared with that on the day of discharge revealed by paired t-test, suggests better mental preparedness. However, preoperatively there is a statistically significant rise of serum cholesterol as compared with that on the day of admission.

This clearly shows that preoperative anxiety and fear remain the same in all age groups. The plasma cholesterol normally varying between 150 and 250 mg per cent is known to be influenced by factors like diet, age, hormones, genetic predisposition, emotional conditions and physical activities[15]. Investigations of fluctuations of cholesterol level depending upon the time of the day, have also been reported[16,17]. Patients of this series were operated within 1 or 2 days of admission. Hospital diet on which they subsisted was vegetarian and of low fat-cholesterol content. Dietary cholesterol takes several days to equilibrate with cholesterol in plasma and several weeks to equilibrate with tissue cholesterol[18]. Determination of cholesterol level in serum of the patients after recovery was carried out by collecting blood samples at same hour as collected on the operation day. This revealed fluctuation of the order of 2 to 3% which confirms that the observed rise of cholesterol in this series is definitely due to preoperative stress only. Rise of serum cholesterol level in preoperative stress can be due to increased sympathetic activity-catecholamine secretion resulting in increased 'VLDL' secretion by liver, involving extra triglyceride and cholesterol output into circulation[18]. In this series there was no patient with renal impairment, the condition which is known to result in elevated plasma cholesterol level. Present investigation clearly indicates the significance of preoperative plasma cholesterol rise as a simple useful guide in assessment of stress.

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Toxicity of *Phytophthora infestans* and *Alternaria solani* to chick embryos[1]

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Summary. None of the extracts and culture filtrates from growth of 9 races of *Phytophthora infestans* on living potato tissue and potato dextrose broth are toxic to chick embryos. Chloroform extracts of 4 out of 10 isolates of *Alternaria solani* grown on potato dextrose broth showed some toxicity to chick embryos.

Under ideal conditions potato tubers are perfectly harmless and fit for human consumption, however, they do contain traces of toxic compounds. Some of the identified toxic compounds include glycoalkaloids. Birth defects such as anencephaly and spina bifida have been attributed to unidentified substances in blighted potatoes[2]. However, rats fed blighted potato material have failed to show such malformations[3–6]. Testing of blighted,