References and Notes

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Degree of Obesity and Serum Cholesterol Level

Abstract. No significant correlation was found between the serum cholesterol level and weight, weight corrected for frame size, or thickness of the fat shadow in medical students (mean age, 22 years).

Among the variables thought to affect serum cholesterol levels in normal subjects, the degree of obesity has been of particular interest because the amount of stored fat is accessible to dietary control. The literature, however, is divided on the relationship of body fat to cholesterol level. Moreover, reports have been variously based on anthroposcopic "endomorphy" ratings (*1, 2*), weight or relative weights (*3*), indices of body build (*4*), or infrascapular fat folds (*1, 5*) and not, to our knowledge, on direct radiographic measurements of the outer-fat shadow.

In the study reported here we compared the thickness of the fat-plus-skin shadow, measured at the level of the tenth rib on standard posteroanterior teleoroentgenograms (*6*), with serum cholesterol levels, determined, by a modification of the Bloor method (*7*), in blood samples obtained at the time the roentgenograms were made. Less direct measures of relative obesity included weight, and weight expressed in relation to the bony-chest diameter, as measured on the films. Replicability was 0.95 for the fat measurements (*8*) and 0.92 for serum cholesterol (*7*).

Table 1. Correlations between various measures of obesity and total serum cholesterol in healthy young men.

N	Mean body wt. (kg)	Serum cholesterol (mg/100 ml)*	Correlation (*r*)
		Body weight	
159	74.8	225.2±36.3	0.033
		Body weight/chest breadth	
134	73.4	226.0±37.8	0.126
		Lower thoracic fat	
125	73.2	222.5±34.2	−0.030

* Mean ± standard deviation.

Subjects included the 159 white male medical students in the classes of 1958, 1959, and 1960 of the Johns Hopkins School of Medicine, for whom body weight, cholesterol level, and postero-anterior chest plates were obtained at the time of admission. The mean height for the group was 178.9 cm, the mean weight was 74.8 kg, and the mean age was 22 years. The cholesterol range was 140 to 386 mg/100 ml with a mean of 225 mg/100 ml, and the lower-thoracic fat range for the subjects in whom the fat-plus-skin shadow could be accurately measured was 2 to 15 mm, with a mean of 7.4 mm.

As shown in Table 1, the correlation between serum cholesterol level and weight in the series of 159 men was not significantly different from zero at the 5-percent level of confidence ($r = 0.13$). In a restricted subsample, from which subjects whose radiographs were not suitable for the chest-breadth measurement had been excluded, the correlation between serum cholesterol and weight corrected for build was similarly low ($r = 0.13$). Finally, the correlation between serum cholesterol and lower-thoracic fat, measured on 125 radiographs technically suitable for the purpose, was −0.03. It is noteworthy that the mean cholesterol levels and their standard deviations in the total sample and in the partial samples were very nearly the same. The ranges for the three groups were identical.

There are many factors in addition to nutritional status which have been shown to be related to the height of the serum-cholesterol level of healthy persons—in particular, age, sex, race, heredity, endocrine patterns, habits of smoking and exercise, and degree of emotional stress. We have reported positive correlations between several of these factors and high cholesterol levels among the Johns Hopkins medical students (*9*). The lack of relationship between the amount of body fat and the serum cholesterol level demonstrated in the present study supports the view that the nutritional status of healthy young men such as medical students is considerably less important in determining the cholesterol level than other biologic factors (*10*).

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Neural and Hypophyseal Colloid Deposition in the Collared Lemming

Abstract. Feral and captive lemmings from Churchill, Manitoba, are subject to a unique pathological process in which a colloidal material is deposited in blood-vessel walls at scattered points through the central nervous system. Destruction of nervous tissue at these foci is progressive, and colloidal masses in the vascular lumina of the hypothalamus appear to become fixed in the capillaries of the hypophyseal anterior lobe. Inflammatory reactions are never associated with the lesions, and the latter are larger and more numerous in older animals in warmer environments.

A current study of the microanatomical and physiological characteristics of the collared lemming (*Dicrostonyx groenlandicus* Traill) has revealed a unique and previously unknown pathology which is probably a significant factor in the behavior and population fluctuations of these ecologically significant arctic rodents.

Lemmings used in this study consist both of animals fixed in 10-percent neutral buffered Formalin immediately after capture at Churchill, August 1953 and July 1954, and captives and their progeny perfused and fixed in Bouin's fluid. Observations on the behavior, reproduction, growth, diseases, and reproductive and endocrine organs of these animals have been presented (*1*). Captive lemmings were raised and maintained usually in an artificially and constantly lighted room at 24°C (21° to 27°. Groups of animals were periodically transferred to darkness and a temperature of 23°C for 4 months, or to a thermostatically controlled deep-freeze cabinet with a transparent lid and forced circulation of air. After 10