the tick toxin can be the only one. *A priori* there seems no reason why any given muscle should be preferentially affected, and one would expect to see a gradual generalized weakening of the skeletal musculature rather than the orderly ascending progression of paralysis which is the observed fact. We conclude that in addition to the peripheral, there is likely to be some central nervous system component to the syndrome which is as yet undefined.

PATRICIA EMMONS
H. MCLENNAN

Department of Physiology,
University of British Columbia,
Vancouver, B.C.
Dec. 8.

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Colloid Osmotic Pressure of Rheumatoid Synovial Fluid

THE colloid osmotic pressure of rheumatoid synovial fluid samples was measured before and after intra-articular hydrocortisone treatment using collodium membranes and a hydrostatic compensation system[1]. Previously, it had been found that contents of vacuum-dried synovial fluid adsorbed decreased volumes of water after cortisone treatment[2]. The results are presented in Tables 1 and 2, but a detailed account on the material is given elsewhere[3].

Table 1. CHANGES OF COLLOID OSMOTIC PRESSURE (IN CM. WATER) OF RHEUMATOID SYNOVIAL FLUID IN CONNEXION WITH HYDROCORTISONE TREATMENT

Clinical effect	No. of cases	Treatment Before	Treatment After	Difference	P
Poor	6	42·3	38·2	−4·1	0·05
Moderate	7	42·3	38·0	−4·3	0·05
Excellent	11	42·4	33·0	−9·4	0·001
All cases	24	42·4	35·7	−6·7	0·001

Table 2. COLLOID OSMOTIC PRESSURE (IN CM. WATER) OF SYNOVIAL FLUID AND SIZE OF THE EFFUSION (CASES OF STAGES I–II ONLY; $P < 0·05$ WITH ANALYSIS OF VARIANCE)

Size	No. of cases	Mean and range	
Moderate	7	41·8	(38–46)
Large	8	44·3	(40–58)
Very large	6	46·3	(42–51)

The colloid osmotic pressure could be correlated with the total protein ($r = 0·66$; $P < 0·001$) and with the blood erythrocyte sedimentation rate ($r = 0·70$, $P < 0·001$) but not with the concentration of synovial fluid sodium, potassium, chloride or hyaluronate or with the intrinsic viscosity. With the size of effusion a relation could be established only in the cases of Stages I–II (roentgenologically non-advanced).

It is concluded that the changes in the protein concentration and consequently in the colloid osmotic pressure of the synovial fluid are of importance in the formation and disappearance of the effusion. It may be argued that if the protein actually passes into the synovial cavity, its colloid osmotic pressure cannot have any significance. Admittedly, in the genesis of traumatic effusions a permeability damage is more important, and in the anatomically more advanced cases with stiff joints the colloid osmotic pressure is generally lower ($P < 0·001$) and seems immaterial. However, submitting the observed clinical and chemical correlations as circumstantial evidence, we suggest that the increased colloid osmotic pressure may prevent the normal resorption of fluid from the synovial cavity in rheumatoid arthritis.

The polysaccharide does not seem important in the maintenance of the colloid osmotic pressure. The significance of the qualitative and quantitative changes in the hyaluronate should be sought from the analogies with the connective tissue response to inflammation.

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PAAVO MÄKINEN
EINO KULONEN

Department of Medical Chemistry,
University of Turku,
Turku, Finland.
Dec. 5.

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Inactivation of Spores of *Bacillus anthracis* by γ-Radiation

THE bactericidal effect of ionizing radiation has been recognized for many years; but it is only recently that serious attention has been given to this method of sterilization for foodstuffs[1] and for pharmaceutical and other products[2,3]. This is due mainly to the increased availability of radioactive isotopes. In this respect γ-radiation seems to be the most useful due to its effective depth of penetration, and the most convenient sources of γ-radiation are cobalt-60 and cæsium-137.

The present communication records the results obtained from a preliminary investigation into the sterilizing efficiency of γ-radiation against spores of *Bacillus anthracis*. Eight strains of *B. anthracis* were used.

Spore suspensions were prepared by inoculating 5 ml. of 'Yeastrel' broth with the test organism; after incubation for 72 hr. the culture was heated at 60° C. for 30 min. The approximate number of viable spores remaining was determined by adding 0·1 ml. of the heated suspension to 100 ml. of broth and then spreading 0·1 ml. of the diluted material over the surface of a dish of 'Yeastrel' agar. If at least 100 colonies grew, this indicated a viable count of at least 10^6 spores/ml. and the suspension was used in the experiment. If less than 100 colonies grew, the suspension was rejected and another culture prepared.

Approximately 0·5 gm. samples of washed goat hair were compressed in test-tubes 15 cm. × 1·5 cm., stoppered with cotton-wool plugs and sterilized by autoclaving at 15 lb./sq. in. for 15 min. Each sample of hair was contaminated by adding to the tube 1 ml. of a spore suspension in broth of the test organism. The samples were then dried at 56° C. for 48 hr. and allowed to stand in the incubator at 22° C. for 4 weeks.

Samples of contaminated hair were treated with increasing doses of γ-rays from a cobalt-60 source. The dose-rate was varied (from 10^4 rad/hr. to