TABLE III. Radiofluoride Contents of Rat Humeri.

Normal animals	B	D	F
F^{18} cts/min./g humerus (wet wt)	311,762	425,342	376,572
Nephrectomized animals	A	C	E
F^{18} cts/min./g humerus (wet wt)	523,538	459,377	916,589

at sites such as cell membranes then relative amounts of these ions found in a tissue is a measure of the fluid volume available to the ion in the tissue.

The sequestration of fluoride by skeletal structures is well known. It is also well known that tendonous structures can be sites of deposition for calcified mineral. It is possible that the unusual concentration of fluoride in the tendon is associated with this same phenomenon. However, chloride concentrations in tendon water are also high and it is possible that the relatively high fluoride and chloride concentrations in tendon water are due to a loss of water through evaporation during exposure and dissection of the thread-like strands of tendon.

Summary. 1) Radiofluoride given by intraperitoneal injection was absorbed and distributed throughout fluid compartments of the rat. It was found in concentrations exceeding that of plasma in the skeleton and in the tail tendon. In all other soft tissues examined, concentration in tissue water was some fraction of plasma concentration. Tissue concentrations in nephrectomized animals were increased but the pattern of distribution was not changed. The skeleton sequestered the bulk of the radiofluoride which would have been excreted by the kidneys. 2) The radiofluoride content of tissues expressed in terms of chloride content of the tissues varied with the nature of the tissue. It was lowest in the brain, highest in skeletal muscle, and was increased in most tissues of nephrectomized animals. The soft tissue fluid compartment volumes are not the same for the 2 halogen anions fluoride and chloride.

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Studies in Leukemia: XIV. Effect of Human Serum on Development of Leukemia in AKR Mice.† (25543)

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An antiserum that will prevent induction of leukemia in C3H and Swiss mice can be produced in rabbits by using cell-free filtrates made from the brains of leukemic mice or patients who died of leukemia(1). Experiments were undertaken to ascertain whether a similar antiserum could be prepared in human volunteers. Acceleration of development of leukemia in the AKR mouse by inoculation of cell-free filtrate from human brain(2) served as the experimental model.

Materials and methods. Equal parts of the brains of 4 patients who died of acute leukemia (2 lymphoblastic, one myeloblastic, one monoblastic) were pooled, and a 1.0% suspension was prepared. A cell-free filtrate was made of this as previously described(3). The filtrate was rapidly frozen and stored at

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TABLE I. The Protective Effect of Serum Obtained from Immunized Human Volunteers, Contrasted to the Effect of Normal Serum and Untreated Controls. In these experiments AKR mice were challenged with leukemic cell-free brain filtrate.

Exp.	Human antiserum	Normal human serum	Untreated
	%	%	%
Feb. 21, 1959	10/15 (66)	14/15* (93)	10/10 (100)
Mar. 12, "	9/15 (60)	11/15 (73)	8/10 (80)
Apr. 28, "	7/15 (47)	15/15 (100)	10/10 (100)
Totals	26/45 (57)	40/45 (88)	28/30 (93)

* No. developed leukemia/No. inj.
Chi square = 11.13. P = .001.

−65°C. Fourteen male volunteers were injected with aliquots of the filtrate (0.1 cc intracutaneously and 0.9 cc subcutaneously) 4 times at weekly intervals. Four weeks after last injection 250 cc of blood were drawn from each volunteer. Seven days later another dose of filtrate was administered and after 6 weeks an additional 500 cc of blood were drawn. The sera were pooled under sterile conditions. This serum will be referred to as *human antiserum*. For purposes of control, pooled *normal human serum* was used.‡ This serum was obtained at approximately the same time from male donors of similar age as the volunteers. Both groups of sera were processed in an identical fashion, and by the same group.

The cell-free filtrates used for challenging the mice were prepared from a 0.25% suspension of a pool of brains obtained from 4 other patients who died of acute leukemia (2 myeloblastic, one monoblastic, one stem cell). Female AKR mice§ between 10 and 12 weeks of age were injected with 0.5 cc of this cell-free filtrate intraperitoneally. The prophylactic inoculations consisted of intraperitoneal injection of 0.5 cc of serum the day before challenge, day of challenge, and day after challenge.

Results. Three experiments were performed and are summarized in Table I. Significant protection is afforded by the human antiserum whereas that afforded by the normal serum is insignificant in all of the 3 experiments.

The results of challenging the mice with various dilutions of the filtrate are shown in Table II. In this experiment the incidence of leukemia was also significantly reduced in the group treated with human antiserum, whereas normal human serum did not significantly affect the results.

TABLE II. The Results of Challenging Mice with Various Dilutions of Active Leukemic Cell-Free Brain Filtrate.

Conc. of leukemic filtrate, %	Human antiserum	Normal human serum	Untreated
	%	%	%
.25	7/15 (46)	15/15* (100)	10/10 (100)
.025	10/25 (40)	19/25 (76)	7/10 (70)
.0025	3/15 (20)	9/15 (60)	5/10 (50)

* No. developed leukemia/No. inj.

Sera were obtained from the volunteers before immunization. These did not afford significant protection to the challenged mice. One of the volunteers was injected with physiologic saline solution instead of leukemic cell-free brain filtrate. His serum failed to show a protective effect.

Summary. Human volunteers were inoculated with a cell-free filtrate prepared from a pool of brains obtained from patients who died of acute leukemia. The antiserum from these volunteers afforded significant protection of AKR mice challenged with cell-free filtrates of leukemic human brains. This protection was not afforded by pooled normal serum, and was apparent at various dilutions of the challenging material.

‡ Obtained from Michael Reese Research Foundation, Chicago, Ill.

§ Obtained from Jackson Memorial Laboratory, Bar Harbor, Me. or Millerton Farms, Millerton, N. J.

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