COMPARISON OF S-K TEST WITH TISSUE EXAMINATION IN DETECTION OF TRICHINELLA SPIRALIS

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CLASSICALLY, trichinosis has been diagnosed by observation of *Trichinella spiralis* in the host's muscle. Two of the methods used for this purpose, the direct microscopic and the digestion-Baermann techniques, have been evaluated (*1,2*).

In recent years, serologic testing for detection of host antibodies against an offending agent has become common clinical practice. Many serologic tests, including precipitin, complement fixation, and flocculation, have been devised for trichinosis. Only the flocculation test is widely used for detection of antibodies against the *T. spiralis* antigen. A positive serologic test suggests *T. spiralis* infestation, but confirmation still depends on observation of the parasite in host tissue.

The Suessenguth-Kline (S-K) flocculation slide test has received extensive experimental evaluation (*3–6*), but a review of the literature indicates that no study has been made which compares the S-K test with the classic muscle examination. The study reported here was undertaken therefore to compare the muscle examination method with the serologic test in the detection of *T. spiralis*.

Materials and Methods

From July 7 to August 21, 1962, serum and muscle specimens were taken during routine postmortem examination of 100 cadavers from nine Allegheny County hospitals. Age, sex, race, and presumptive diagnosis were obtained for each of these former patients. Their ages ranged from 15 to 87 years, with a mean of 59.7 years and a median of 63 years. Sixty-nine percent were between 59 and 70 years of age at time of death. Trichinosis had not been suspected, either clinically or at autopsy, in any of the patients.

Each serum specimen, obtained by intracardiac puncture, was placed in a sterile test tube and refrigerated until used (several hours to 3 days). The muscle specimen, consisting of the tendinous insertion of the diaphragm with surrounding muscle, was also refrigerated until the tests were performed (1–25 days).

Serum and muscle specimens from each cadaver were numbered at random, so that the laboratory technician did not know the correspondence of the serum specimen with the muscle specimen from the same cadaver.

The S-K flocculation slide test, as described by Suessenguth and Kline (*7*) was performed on each serum specimen.

Approximately 20 to 30 grams of diaphragm muscle were minced. Two aliquots (approximately 5 grams each) of the minced muscle were placed between 3- by 4-inch slides, and two such preparations were examined microscopically for larvae. All of the minced muscle (including the aliquots used for microscopy) was then placed in artificial gastric juice (5 grams pepsin, 7 cc. hydrochloric acid, and 1 liter water) and incubated at 37° C. for 1 to 3 days. After incubation, the sediment was caught on a No. 40 mesh screen, transferred to a petri dish by washing, and examined microscopically for larvae.

Results and Discussion

Results of the laboratory tests, by race and sex of the cadavers, are shown in table 1. A single larva was identified in each positive specimen, and in only one specimen was the larva calcified. *T. spiralis* larvae were observed in specimens from five cadavers (table 2). This prevalence of trichinosis in Allegheny County during the study period was considerably lower than the reported prevalences of 10 to 20 per-

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cent during the 1940's (*8*). Instrumental factors in the lowered prevalence may be the feeding of cooked garbage to hogs and more thorough cooking of pork by a better-informed public.

Although five muscle specimens were positive by the direct microscopic test, only one of their corresponding serum specimens was positive by the S-K test. Three explanations may account for this finding:

1. The *T. spiralis* larvae may have become antigenically inert. Suessenguth and associates (*6*) found that in experimentally infected hogs the S-K test remained positive for 4½ years from the time of inoculation. Perhaps the cadavers with negative serum tests and positive muscle tests had been infected with *T. spiralis* for many years. Possibly only live larvae are an antigen stimulus.

2. The severity of infection may influence the results of serologic tests. A critical number of antigen-producing larvae may be necessary to produce an immunological response, and any reduction in that number may produce a false negative result.

3. The four serologically negative specimens may have come from patients with hypoproteinemia during their terminal hospitalization. Also to be considered is the possibility of deterioration of the antibody fraction following death. Both of these conditions may have been responsible for the false negative results.

During the study period, 425 serum specimens (made available by the Allegheny County Health Department after they had been tested for syphilis) were tested with the S-K flocculation slide test. Fourteen of these specimens yielded positive results, a prevalence of 3.3 percent. This low prevalence as compared with the 9.2 percent found by Suessenguth (*3*) under similar circumstances (S-K test on unselected serums) further supports the observation of a reduced prevalence of trichinosis.

Table 1. Number of positive results obtained in laboratory tests for detection of trichinosis in serum and muscle specimens from 100 cadavers, by race and sex of cadavers

Test	Race		Sex	
	White (N=89)	Non-white (N=11)	Male (N=57)	Female (N=43)
S-K flocculation	2	0	1	1
Direct microscopic	5	0	2	3
Digestion	1	0	0	1

Table 2. Results of laboratory tests for detection of trichinosis in corresponding serum and muscle specimens from 100 cadavers

Number of specimens	Laboratory tests		
	Direct microscopic (muscle specimens)	Digestion (muscle specimens)	S-K (serum specimens)
94	Negative	Negative	Negative.
1	Positive	Positive	Positive.[1]
4	do	Negative	Negative.
1	Negative	do	Positive.[2]

[1] 2+. [2] 1+.

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