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# CLINICAL ASPECTS OF CHRONIC TRICHINELLOSIS IN PEOPLE. III. ANALYSIS OF CLINICAL AND ANATOMOPATHOLOGIC DIAGNOSES OF CASES IN WHICH *TRICHINELLA* INFECTION WAS DETECTED IN POST-MORTEM EXAMINATIONS *

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A group of patients with the history of acute trichinellosis was followed up over the period of 9 months for the symptoms of the chronic course of the disease; they most often manifested themselves by the complaints related to the motoric and circulatory systems, mainly by heart troubles [4]. In the next work we have dealt with premises and evidence indicating that the complaints of chronic trichinellosis may persist for a long time, the patients of this kind being occasionally treated balneologically under the misdiagnosis of rheumatic disease [5]. Biopsy being often refused the demonstration of the parasite in the muscle is not feasible. Among the indirect methods, the allergic test in addition to objective and subjective findings can prove with more or less probability that we have to do with chronic trichinellosis, or that the latter is one of the disease components. In the present work, aimed at further elucidation of chronic trichinellosis, we have made retrospective studies, including analysis of case histories and post-mortem examinations of cases with the reliable parasitologic diagnosis of trichinellosis, made at autopsy table.

## Materials and Methods

We began with mass post-morten examinations performed in our laboratory on the specimens (muscular sections of the diaphragm) sent

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to us from various anatomical laboratories in order to obtain epidemiologic data about the incidence of trichinellae in the population of Poland. Microscopic and digestion methods were used, which gave consistent results or complemented each other, permitting the detection of old infections, partially or completely calcified parasites, as well as of slight invasions, occasionally only with single parasites in the digested 20-30 g muscular samples.

The investigations concerned then persons who died for various reasons, were mostly treated in clinics and hospitals and subjected to post-mortem examinations; they were mostly elderly people, young persons and children being exceptional.

In positive cases (demostration of the parasite) we have tried to obtain possibly detailed data from the post-mortem examinations and observations from the evolution of the disease. It was not always feasible, hence the lower number of cases subjected to analysis as compared with that of trichinellosis, detected at autopsy. There was, of course, no selection of cases. Mostly, we had to relie on observations and descriptions of various clinicians or anatomopathologists, to whom we wish to express our thanks.

**Results**

The below discussed material concerns 53 cases, including 24 women and 29 men, dead at the age of 4 to 97 years. The number of cases in the individual age groups is as follows:

| Age | 0—10 | 11—20 | 21—30 | 31—40 | 41—50 | 51—60 | 61—70 | 71—80 | 81 |
|---|---|---|---|---|---|---|---|---|---|
| No. of cases | 1 | 1 | 2 | 5 | 2 | 13 | 18 | 9 | 2 |

In view of the copious and manifold material we have given only shortened clinical and anatomo-pathologic diagnoses of all persons, arranged at random, including examinations for trichinellae. We feel that the material may be of use when considering other, hitherto unknown aspects of chronic trichinellosis.

The ordinal number is followed by the initials of sex (M or F), age, place of anatomo-pathologic examination, clinical (**clin.**), anatomo-pathologic (**anat.-pathol.**) diagnosis, examination for trichinellae (**Trich.**) by microscopic method (M), one figure denoting the number of detected larvae, the other that of examined barley-corn-sized muscular specimens; analogically, in the digestive method (D), one figure means the number

of larvae, the other — the approximate amount of digested muscular tissue in grams. The microscopic studies were invariably done and only in case of negative result did we use the digestive method, which was occasionally successful in demonstrating the parasites. The latter method was not resorted to when the former did show a considerable number of parasites.

1. F, 59, Łódź, **Clin.**: Vitium cordis mitrale in stadio insufficientiae circulatoriae. Bronchopneumonia bilateralis. Peritonitis. **Anat.-path.**: Endocarditis chronica fibrosa valvulae mitralis. Vitium cordis sub forma stenosis ostii venosi sinistri. Hypertrophia excentrica cordis dextri et dilatatio cordis sinistri. Venostasis organorum inveterata. Peritonitis purulenta diffusa et synochiae viscerales cum suppuratione et formatione fistulae. **Trich.** M 1/14.
2. M, 70, Łódź, **Clin.**: Insultus cerebri cum hemiplegia dextra probabiliter propter haemorrhagiam in individuo arteriosclerotico. Myocarditis chronica. **Anat.-path.**: Arteriosclerosis arterialis gradu magno praecipue aa. basis cerebri et coronarium cordis. Haematocephalus. Focus haemorrhagicus destruens nucleorium basalium hemisphaerii sinistrii cerebri. Haemorrhagia subarachnoidalis cerebelli. Renes arteriosclerotici. Dilatatio cordis atrophicans. Steatosis myocardii **Trich.** M —, D 1/20.
3. F, 67, Łódź, **Clin.**: Tuberculosis pulmonum. Insufficientia circulatoria. **Anat.-path.**: Tuberculosis fibroso - cavernosa pulmonis utriusque, praecipue dextri. Concretio completa cavi pleurae utriusque. Bronchopneumonia inferior dextra. Hypertrophia excentrica cordis dextri. **Trich.** M —, D 1/20.
4. M, 59, Wrocław, **Clin.**: Carcinoma oesophagi inoperabile. Cachexia carcinomatosa. **Anat.-path.**: Carcinoma planoepitheliale aceratodes partis inferioris oesophagi exulcerans et stenoticans. Metastases carcinomatosae lymphonodulorum infra- et peribronchialium atque peritrachealium. Fistula oesophago - bronchialis bronchi sinistri. Sclerosis aortae et arteriarum coronarium cordis. Dilatatio cordis totius. Degeneratio hepatis et renum adiposa. **Trich.** M —, D 4/20.
5. F, 76, Wrocław, **Clin.**: Atherosclerosis dispersa praecipue arteriarum cerebri, arteriarum coronarium cordis. Infarctus myocardii recente peractus. Myodegeneratio cordis atherosclerotica decompensata. Sanguinatio e tractu digestivo suspecta. **Anat.-path.**: Atherosclerosis aortae, arterarium cordis, arteriarum basis cerebri et atheromatosis valvulae mitralis et valvularum semilunarium aortae. Nephrocirrhosis arteriosclerotica. Cicatrices myocardii ventriculi sinistri et cicatrix permagna post infarctum myocardii septi interventriculorum. Hypertrophia musculi cordiis sinistri. Dilatatio cordis totius. Fibrosis endocardii parietis septalis. Emphysema pulmonum chronicum. Bronchitis mucopurulenta chronica. Ulcus permagnus curvaturae minoris ventriculi perforans ad bursam omentalem et pancreatem perforans atque ulcera superficialia nonnulae intestini tenuis et crassi. Haemascos. Melena. **Trich.** M 5/36.
6. M, 39, Wrocław, **Clin.**: Uraemia vera. Glomerulonephritis chronica toxica cum nephrosi. Hypertonia secundaria. Anaemia secundaria maioris gradus. Tonsillitis purulenta chronica. Polyneuritis toxica. Colitis uraemica. Diathesis haemorrhagica. **Anat.-path.**: Glomerulonephritis chronica bilateralis. Sclerosis aortae et arteriarum coronarium cordis levis. Cicatrices myocardii. Hypertrophia et dilatatio cordis totius. Oedema pulmonum et cerebri. Hydrothorax bilateralis. Oedema cutis extremitatum inferiorum. Degeneratio hepatis adiposa incipiens.

Enterocolitis catarrhalis et colitis ulcerosa chronica. Petechiae pontis cerebri. Leptomeningitis chronica leptomeninguum cerebelli. **Trich.** M 3/36.

7. F, 40, Wrocław, **Clin.**: Polyserositis tbc praecipue pleuritis exsudativa bilateralis et pericarditis adhaesiva. Pericarditis sicca sub finem vitae. Asthma cardiale. **Anat.-path.**: Lymphosarcoma pleurae dextrae, mediastini anterioris et posterioris, pericardii et epicardii, lymphonodulorum epiclaviarum et cervicalis. Trichinosis diaphragmatis maioris gradus. Pleuritis seroso-fibrinosa subchronica bilateralis. Concrectiones pleurales bilaterales. **Trich.** M 107/14.
8. F, 68, Wrocław, **Clin.**: Proc. atheromatosus universalis. Bronchopneumonia. Cholecystopathia. Enterocolitis. Psychosis egzogenes. Laesio myocardii. Insufficientia circulatoria. **Anat.-path.**: Sclerosis aortae et arteriarum coronarium cordis. Hypertrophia myocardii ventriculi sinistri. Dilatatio cordis totius. Hyperaemia et oedema pulmonum. Cholelithiasis. **Trich.** M 107/14.
9. M, 76, Wrocław, **Clin.**: Infarctus myocardii parietis posterioris. Atherosclerosis universalis praec. aa. coron. cordis et aortae. Tbc. fibrosonodosa pulmonum utriusque. Oedema pulmonum. **Anat.-path.**: Infarctus myocardii recens permagnus parietis anterioris ventriculi sinistri. Atheromatosis aortae, arteriarum coronariarum cordis et basis cerebri. Cicatrices parvae myocardii. Dilatatio cordis totius. Oedema pulmonum. Tuberculosis fibrosa apicis pulmonis dextri et fibroso-cavernosa apicis pulmonis sinistri. **Trich.** M 37/14.
10. M, 62, Opole, **Clin.**: Ca bronchogenes suspectum. Cachexia. Spondyloarthrosis deformans. **Anat.-path.**: Carcinoma cylindrocellulare adenoides bronchi sinistri. Metastases carcinomatosae lobi superioris pulmonis dextri, renum, hepatis et glandulae suprarenalis dextrae. Infiltratio carcinomatosa aortae ascendentis cum stenosi. Arteriosclerosis gradus minoris aortae. **Trich.** M 18/14.
11. M, 68, Lublin, **Clin.**: Infarctus myocardii. Bronchitis et peribronchitis. Hypertonia essentiale in anamnesi. **Anat.-path.**: Infarctus recens myocardii parietis anterioris ventriculi sinistri et septi intraventricularis ter ruptus. Haemopericardium. Hypertrophia cordis totius praecipue ventriculi sinistri. Adenoma clarocellulare renis utriusque. **Trich.** M 3/14.
12. M, 66, Szczecin, **Clin.**: Infarctus myocardii recens regionis parietis posterolateralis in individuo cum arteriosclerosi universalis. Morbus ulcerosus in anamnesi. **Anath.-path.**: Arteriosclerosis universalis gradus maioris. Stenosis lamina atheromatosa arteriae coronariae dextrae. Thrombosis recens eiusdem regionis. Infarctus recens myocardii partis inferioris septi interventricularis et partis inferioris parietis posterioris ventriculi sinistri. Haemopericardium (250 ml). Calculi cholesterolitici in lumine vesicae felleae. **Trich.** M 11/14.
13. M, 57, Łomża, **Clin.**: Perforatio jejuni, peritonitis diffusa, asthma bronchiale, myodegeneratio cordis. **Anath.-path.**: Status post laparatomiam et suturam jejuni recente factam. Peritonitis purulenta diffusa. Gastro-enteritis haemorrhagica partim necroticans. Bronchitis chronica mucosa. Hypertrophia ventriculi sinistri cordis. Stenosis arcus aortae. Arteriosclerosis gradu mediocri centralis et peripherica. **Trich.** M 3/14.
14. F, 83, Łomża, **Clin.**: Contusio generalisata. Fractura costarum lateris sinistri. Emphysema subcutaneum. Insufficientia circulatoria. **Anat.-path.**: Fractura costarum VI-X sinistrarum, pneumothorax sinister atque emphysema subcutaneum lateris sinistri thoracis et colli consecutivum. Degeneratio fusca myocardii. Atrophia renum, lienis, hepatis. Enterocolitis haemorrhagica. Senilitas. **Trich.** M 13/14.
15. F, 97, Szczecin, **Clin.**: Arteriosclerosis universalis in stadio insufficientiae

circulatoriae. Bronchopneumonia dextra. Infarctus myocardii suspectus. **Anat.-path.**: Vitium mitrale: fibrosis et calcificatio endocardii regionis ostii venosis sinistri et fibrosis valvulae mitralis. Dilatatio atrii sinistri cordis gradus mediocris. Arteriosclerosis universalis gradus permagni. Cystes apoplecticae minutae nucleorum basalium cerebri. Atrophia simplex cerebri et lienis. **Trich.** M 10/14.

16. F, 65, Szczecin, **Clin.**: Nephritis apostematosa. Uraemia. Status post nephrectomiam sinistram. Myocardosis arteriosclerotica. Insufficientia circulatoria praecipue extracardiaca. Anaemia secundaria. **Anath.-path.**: Status post nephrectomiam sinistram recenter factam. Haematoma regionis perirenalis. Necrosis lienis totalis. Haemorrhagia ad glandulam suprarenalem sinistram. Arteriosclerosis arteriarum coronariarum cordis gradus maioris cum obliteratione completa rami circumflexi arteriae coronariae sinistrae. Arteriosclerosis universalis gradus levioris. Degeneratio parenchymatosa hepatis, renis dextri. Dilatatio ventriculi sinistri cordis. Hypertrophia ventriculi dextri cordis gradus levioris **Trich.** M 12/14.
17. F, 80, Szczecin, **Clin.**: Arteriosclerosis universalis. Myocardosis arteriosclerotica cum arrhythmia completa e fibrillatione atriorum in stadio insufficientiae circulatoriae chronicae. Bronchopneumonia sinistra. Hernia hiatus oesophagealis. Spondyloarthrosis deformans. **Anath.-path.**: Arteriosclerosis universalis gradus maioris praecipue arteriarum coronariarum cordis cum obliteratione rami circumflexi arteriae coronariae sinistrae. Renes arteriosclerotici. Encephalomalacia grisea ganglionum basalium sinistrorum. Obliteratio sacci pericardii. Hypertrophia concentrica ventriculi dextri cordis gradus minoris. Atrophia fusca myocardii et hepatis. **Trich.** M 4/14.
18. M, 19, Szczecin, **Clin.**: Endomyocarditis rheumatica peracta. Insufficientia valvularum semilunarium aortae et insufficientia valvulae mitralis et stenosis ostii venosi sinistri cum tachyarrhythmia completa e fibrillatione atriorum in stadio insufficientiae circulatoriae chronicae. **Anat.-path.**: Endocarditis valvularum semilunarium aortae productiva. Cor bovinum. Thrombus parietalis atrii sin. cordis. Pericarditis fibrinosa. Infarctus miltiplices pulmonis dextri. Ascites. Hydrothorax. Oedema pulmonum. **Trich.** M —, D 3/20.
19. M, 52, Szczecin, **Clin.**: Lymphogranulomatosis maligna. **Anat.-path.**: Lymphogranulomatosis maligna. **Trich.** M —, D 1/20.
20. M, 61, Szczecin, **Clin.**: Carcinoma pulmonis. Trichinellosis. **Anath.-path.**: Carcinoma bronchogenes pulmonis dextri. **Trich.** M 17/14.
21. M, 66, Szczecin, **Clin.**: Infarctus myocardii recens. **Anat.-path.**: Infarctus myocardii recens. **Trich.** M 11/14.
22. M, 59, Białystok, **Clin.**: Cor pulmonale chronicum in stadio insufficientiae circulatoriae. Bronchopneumonia. Hypertrophia prostatae in stadio insufficientiae renum. Infarctus myocardii susp. **Anat.-path.**: Emphysema pulmonum gradu maioris, partim bullosum. Obliteratio partialis et adhaesiones teniaeformes cavi pleurae utriusque. Sclerosis aortae levioris gradus. Hypertrophia musculi cordis concentrica et excentrica praecipue dextri. Degeneratio parenchymatosa myocardii et renum. **Trich.** M. 7/14, D 69/20.
23. M, 52, Białystok, **Clin.**: Peritonitis diffusa. Schock. Insufficientia circulatoria. Cachexia. Uraemia. Status post resectionem ventriculi m. Hoffmeiner. **Anat.-path.**: Peritonitis fibrinopurulenta diffusa. Status post resectionem ventriculi. Laesio suturae gastrojejunalis. Abscessus subphrenicus dexter et subhepaticus. Amyloidosis diffusa lienis, renum, glandularum suprarenalium et hepatis. Degeneratio parenchymatosa myocardii. Emphysema et oedema pulmonum. Infiltratio adiposa focalis intimae aortae. **Trich.** M —, D 5/20.

24. F, 77, Białystok, **Clin.**: Carcinoma vulvae. Metastases ad lymphoglandulas inguinales. **Anat.-path.**: Carcinoma planoepitheliale keratoblasticum exulcerans vulvae cum metastasibus ad lymphonodulus inguinales praecipue dextrae. Haemorrhagia massiva glandulae suprarenaliae dextrae. Arteriosclerosis atheromatosa et ulcerosa centralis et peripherica maioris gradus. Aneurysma sacciforme arteriae carotis internae dextrae. Cirrhosis renis sinistri. Degeneratio cystica pancreatis. Hypertrophia concentrica permagna myocardii totius praecipue sinistri. **Trich.** M 3/14.
25. F, 35, Białystok, **Clin.**: Pneumonia lobaris dextra. Hepatitis acuta (Atrophia acuta flava). Coma hepaticum. Insufficientia circulatoria. **Anat.-path.**: Hepatitis interstitialis chronica in cirrhosi vertens. Steatosis degenerativa diffusa hepatis. Necrosis microfocalis dispersa hepatis. Icterus integumenti communis. Varices oesophagi. Pneumonia cruposa in stadio hepatisationis griseae lateris dextri et partis centralis lobi inferioris sinistri. Degeneratio parenchymatosa myocardii et renum. Infiltratio lipoidosa intimae aortae. **Trich.** M 15/14, D 675/10.
26. F, 48, Białystok, **Clin.**: Polyneuritis. Insufficientia circulatoria. Bronchopneumonia. **Anat.-path.**: Carcinoma planoepitheliale keratodes partim intermediocellulare bronchogenes pulmonis sinistri. Metastases carcinomatodes ad lymphonodulos mediastini, colli, periaortales et perirenales. Carcinoma metastaticum hepatis, cordis, renum, et columnae vertebralis regionis $C_5$-$Th_1$ et $L_{3-5}$ cum necrosi medullae spinalis loco eiusdem. Nephritis interstitialis chronica. Degeneratio parenchymatosa myocardii et hepatis. Infiltratio lipoidosa intimae aortae. **Trich.** M 2/14, D 2/10.
27. F, 4, Białystok, **Clin.**: Polydypsia, polyphagia, polyria, cachexia. **Anat.-path.**: Atrophia apparatus insularis pancreatis. Pneumonia interstitialis partim haemorrhagiae punctatae intestini. Degeneratio albuminurica renum. Enterocolitis marrhagica. Hae catarrhalis. Degeneratio parenchymatosa myocardii. **Trich.** M —, D 38/30.
28. M, 69, Białystok, **Clin.**: Emphysema pulmonum. Cor pulmonale decompensatum. **Anath.-path.**: Emphysema bullosa pulmonum gravis. Arteriosclerosis atheromatosa centralis et peripherica. Sclerosis ramorum arteriae pulmonalis. Nephrosclerosis. Hypertrophia concentrica et excentrica musculi cordis totius. Degeneratio parenchymatosa myocardii, hepatis et renum. Hepar moschatum in cirrhosis vertens. **Trich.** M 2/14.
29. F, 45, Białystok, **Clin.**: Ca mammae sin. cum metastasibus ad hepatem. **Anat.-Path.**: Carcinoma macrocellulare microfocale et dispersum mammae sinistrae. Metastases carcinomatodes ad hepatem ad cerebelli et cerebri hemispherii sinistri regionis occipitalis. Stasis biliaris hepatis. Icterus universalis. Degeneratio parenchymatosa myocardii et renum. **Trich.** M —, D 8/30.
30. F, 65, Białystok, **Clin.**: Cirrhosis hepatis. Varices oesophagii. Coma hepatica. Susp. neoplasma hepatis. **Anat.-path.**: Varices oesophagii cum haemorrhagiae e tractus digestivi. Liquor sanguinis et cruores in luminae oesophagii, ventriculi, intestini ilei et crassi. Cirrhosis annularis et necrosis focalis hepatis. Icterus universalis gravis. Cholecystitis calculosa chronica profunda. Arteriosclerosis atheromatosa centralis et peripherica. Degeneratio parenchymatosa myocardii, hepatis et renum. **Trich.** M 5/14.
31. M, 57, Białystok, **Clin.**: Hemiparesis dextra. Insultus cerebri. Infarctus myocardii susp. **Anat-path.**: Atherosclerosis alterativa praecipue intimae aortae, arteriarum coronariarum cordis et arteriarum cerebri. Encephalomalacia alba dispersa regionis hemisphaerae sinistrae. Thrombosis arteriae caroticae com-

munis dextrae et arteriae iliacae communis sinistrae. Cicatrices post infarctus musculi cordis sinistri. Infarctus recens lienis et renum. Degeneratio parenchymatosa myocardii et hepatis. **Trich.** M 2/14.

32. M, 58, Białystok, **Clin.**: Empyema pleurae dextrae et fistula bronchii. Pleuritis exudativa sinistra. Amyloidosis renis et hepatis. Myodegeneratio cordis. Susp. abscessus cerebri. **Anat.-path.**: Abscessus cerebri regionis lobi occipitalis hemisphaerii dextri perforans ad ventriculi lateralis dextri. Pus in luminae omnium ventriculorum cerebri. Leptomeningitis purulenta cerebelli. Oedema cerebri. Cirrhosis et haemosiderosis lobi inferioris pulmonis dextri. Adhaesiones planae cavi pleurae dextrae cum drenage, regionis lobi inferioris. Arteriosclerosis atheromatosa universalis praecipue arteriarum coronariarum cordis et aortae et baseos cerebri. Hypertrophia concentrica et excentrica musculi cordis totius. Degeneratio parenchymatosa et atrophia fusca myocardii **Trich.** M 61/4.
33. M, 71, Białystok, **Clin.**: Cor pulmonale decomp. Insufficientia circulatoria cardiaca. Susp. infarctus myocardii. Sclerosis diffusa, Emphysema pulmonum. **Anat.-path.**: Syndroma Ayerza: emphysema et anthracosis pulmonum. Atherosclerosis ramorum arteriae pulmonalis. Hypertrophia concentrica et excentrica musculi cordis praecipue dextri. Atherosclerosis intimae aortae, arteriarum coronariarum cordis et arteriarum cerebri permagna. Cicatrices post infarctum regionis parietis posterioris et lateralis ventriculi cordis sinistri. Degeneratio parenchymatosa myocardii, hepatis et renum. **Trich.** M 17/14.
34. F, 79, Białystok, **Clin.**: Insufficientia circulatoria cardiaca chronica. Arteriosclerosis universalis. Emphysema pulmonum. **Anat.-path.**: Arteriosclerosis atheromatosa partim alterativa et ulcerosa centralis et peripherica, praecipue aortae. Emphysema et antracoris pulmonum. Hypertrophia concentrica et excentrica myocardii totius praecipue sinistri. Degeneratio parenchymatosa et atrophia fusca myocardii. Pseudocirrhosis bivenosa hepatis incipiens. Hydropericardium. Hydrothorax sinister. Ascites. Anasarca. **Trich.** M 3/14.
35. F, 66, Białystok, **Clin.**: Myodegeneratio cordis arteriosclerotica decomp. cor pulmonale chr. decomp. Pseudocirrhosis hepatis cardiaca. Pericarditis exudativa susp. Emphysema pulmonum. Insufficientia ventricularis sin. et dextri cordis. Oedema pulmonum. **Anat.-path.**: Tuberculosis caseosa lymphonodulorum mesenterii mediastini et hili pulmonum. Adenoma carticalis glandulae suprarenalis sinistrae. Emphysema et anthracosis pulmonum. Arteriosclerosis atheromatosa partim alterativa centralis et peripherica. Hypertrophia concentrica et excentrica myocardii totius. Degeneratio parenchymatosa et atrophia fusca myocardii. Hydropericardium. Hydrothorax bilateralis. Hepar moschatum in cirrhosis vertens. **Trich** M 26/14.
36. M, 56, Białystok, **Clin.**: Ca pulmonis sinistri cum compressione oesophagii. Cachexia neoplasmatica. Insufficientia circulatoria symptomatica. **Anat.-Path.**: Carcinoma microcellulare bronchogenes pulmonis sinistri. Infiltratio carcinomatosa lyphonodulorum mediastini et periaortales regionis abdominis. Haemorrhagia bronchorum sinistrorum. Liquor sanguinis et cruores sanguinans in lumine ventriculi. Degeneratio parenchymatosa myocardii et renum. Emphysema pulmonum. Hypertrophia concentrica et excentrica myocardii totius. **Trich.** M 4/14.
37. F, 73, Białystok, **Clin.**: Ca colonis transversi. reg. flexurae lienalis. Pleuritis exudativa dextra. Myodegeneratio cordis. Susp. infarctus myocardii. Insufficientia circulatoria. Status post operationem. Anus praeter naturalis. **Anat.-path.**: Adenocarcinoma gelatinosum partim solidum intestini crassi praecipue regionis flexurae lienalis et intestini ilei. Peritonitis carcinomatosa diffusa.

Focus tuberculosus primarius calcificatus regionis apicis pulmonis sinistri. Tuberculosis chronica fibrosa productiva partim calcificans lymphonodulorum mediastini antici et postici et lienis. Tuberculosis ulcerosa et nodosa cutis regionis thoracis, cruris, femoris et glutei dextri. Infarctus haemorrhagici abscendes No II lobi superioris et inferioris pulmonis dextri. Angiothrombosis recens ramorum arteriae pulmonalis dextrae. Pleuritis fibrinosa loco infarctus. Cholecystitis calculosa chronica purulenta. Tumor lienis septico-venostaticus. Atherosclerosis praecipue arteriarum coronariarum cordis et arteriarum basalium cerebri. Atherosclerosis aortae. Degeneratio parenchymatosa et atrophia fusca myocardii. Dilatatio cordis dextri. Status post laparatomiam. Anus praeter naturalis. **Trich.** M 10/14.

38. M, 32, Białystok, **Clin.**: Cor pulmonale chronicum in stadio decompensationis. Suspitio thrombosis venae cavae superioris et subclaviae dextrae. Bronchopneumonia. Insuff. valvulae mitralis. **Anat.-path.**: Thrombosis ramorum arteriae pulmonalis subsequente infarctus inveteratus lobi superioris pulmonis sinistri et infarctus recentes pulmonis dextri. Thrombus parietalis auriculi cordis dextri. Vitium cordis — foramen ovale apertum. Thrombosis venae axillaris, subclaviae, carotis internae et externae dextrae et venae cavae superioris. Hypertrophia concentrica et excentrica myocardii, praecipue ventriculi dextri. Degeneratio parenchymatosa et fibrosis myocardii. **Trich.** 17/14.
39. F, 61, Białystok, **Clin.**: Carcinoma hepatis cum metastasibus. Coma hepaticum. Peritonitis circumscripta. Cachexia neoplasmatica. Arteriosclerosis diffusa. Emphysema pulmonum. **Anat.-path.**: Cirrhosis hepatis. Necrosis hepatis microfocalis disseminata. Stasis biliaris hepatis. Icterus universalis. Haemorrhagiae punctatae subpleurales. Angiothrombosis pulmonum recens. Infarctus haemorrhagicus pulmonis dextri regionis hili. Ileitis terminalis (Morbus Croni). Arteriosclerosis atheromatosa centralis et peripherica praecipue arteriarum coronarium cordis et aortae. Emphysema pulmonum. Hypertrophia concentrica musculi cordis totius. **Trich.** M 4/14.
40. F, 63, Białystok, **Clin.**: Cirrhosis hepatis cum ictero in stadio insufficientiae hepatis et circulatoriae (cor bovinum), hydrothorax, hydropericardium, ascites et anasarca. Haemorrhagia tractus digestivi. Status comatosus. **Anat.-path.**: Bronchopneumonia dispersa bilateralis. Varices oesophagii. Gastritis chronica exulcerans. Liquor sanguinis et cruores in luminae ventriculi et intestinorum. Cirrhosis annularis et stasis biliaris hepatis. Icterus universalis. Necrosis zonae corticalis glandulae suprarenalis. Arteriosclerosis atheromatosa universalis et alterativa aortae. Sclerosis ramorum arteriae pulmonalis. Sclerosis focalis valvulae bicuspidalis, tricuspidalis et valvularum semilunarium aortae. Hypertrophia concentrica et excentrica musculi cordis totius praecipue sinistri. Degeneratio parenchymatosa myocardii et renum. Hydrothorax, hydropericardium, ascites et anasarca. **Trich.** M 39/14.
41. F, 29, Białystok, **Clin.**: Abortus septicus. Pelvoperitonitis. Sepsis universalis. Bronchopneumonia. Phlegmona submandibularis lateris sinistri. Insufficientia circulatoria et renum acuta. **Anat.-path.**: Sepsis: residua placentaria suppurationis et necrotisationis, endomyometritis purulenta chronica abscendes partim haemorrhagia cum angiothrombosi, hepatitis purulenta, bronchopneumonia abscendes bilateralis, pelveoperitonitis fibrinosa circumscripta, pleuritis sero-fibrinosa bilateralis, adnexitis purulenta. **Trich.** M 10/36.
42. M, 66, Białystok, **Clin.**: Infarctus myocardii. Suspitio tumor ureteris dextri. **Anat.-path.**: Adenoma prostatae. Prostatitis purulenta. Dilatatio vesicae urina-

riae. Cystitis mucopurulenta. Ureteritis mucopurulenta lateris utriusque. Pyelonephritis purulenta. Stenosis pylori. Dilatatio ventriculi. Arteriosclerosis atheromatosa centralis et peripherica praecipue arteriarum coronariarum cordis, basis cerebri et aortae. Hypertrophia concentrica musculi cordis totius. Dilatatio ventriculorum cordis. Fibrosis myocardii. Atrophia fusca myocardii. **Trich.** M 7/36.

43. F, 56, Białystok, **Clin.**: Infarctus myocardii in individuo c. insuff. valvularum semilunarum aortae. **Anat.-path.**: Bronchopneumonia dispersa et confluens lateris utriusque. Infarctus inveteratus myocardii regionis parietis anterioris, septi interventricularis et apicis cordis. Arteriosclerosis atheromatosa centralis et peripherica praecipue arteriarum coronariarum cordis, basis cerebri et aortae. Stenosis et deformatio orificiorum arteriarum planae restiformes. Hypertrophia concentrica musculi cordis totius. Oedema pulmonum. **Trich.** M 3/14.
44. M, 61, Białystok, **Clin.**: Cirrhosis hepatis-ascites. Nephrosis in stadio insufficientiae renum. Inanitio gradu maioris (hypoproteinaemia, hypoalbuminaemia). Anaemia secundaria. Emphysema pulmonum. Sclerosis diffusa. **Anat.-path.**: Cirrhosis hepatis annularis. Ascites. Varices oesophagi. Nephritis interstitialis chronica. Bronchitis purulenta. Arteriosclerosis atheromatosa centralis et peripherica praecipue arteriarum coronariarum cordis, basis cerebri et aortae. Emphysema et anthracosis pulmonum. Hypertrophia concentrica musculi cordis totius. Oedema cerebri et pulmonum. **Trich.** M 2/14.
45. F, 76, Białystok, **Clin.**: Status post operationem ca mammae sin. Susp. neo tract. digestivi. Ascites. Oedema extremitatis supp. sin. Arteriosclerosis universalis. Myodegeneratio cordis. Oedema pulmonum. **Anat.-path.**: Carcinoma ventriculi regionis praepylorici cum metastasibus ad lymphonodulos periventriculares, periaortales et hili hepatis. Status post amputationem radicalem mammae sin. et post radioterapiam propter carcinoma olim factam. Necrosis Balseri focalis capitis pancreatis. Arteriosclerosis atheromatosa partim alterativa universalis. Hypertrophia concentrica et excentrica myocardii totius. Oedema cerebri et pulmonum. Hydropericardium. Hydrothorax bilateralis. Ascites. Anasarca. **Trich.** M 43/14.
46. M, 59, Białystok, **Clin.**: Carcinoma pulmonis. Haamorrhagiae pulmonum. Insufficientia circulatoria. **Anat.-path.**: Carcinoma microcellulare pulmonis dextri. Infiltratio carcinomatodes parietis bronchii cum haemorrhagia et bronchii lobi superioris pulmonis dextri. Metastases carcinomatodes ad lymphonodulorum hili pulmonis dextri et mediastini. Arteriosclerosis atheromatosa universalis praecipue arteriarum coronariarum cordis, arteriarum baseos cerebri et aortae. Nephrosclerosis. Hypertrophia concentrica et excentrica musculi totius. Degeneratio parenchymatosa myocardii, hepatis et renum. Atrophia fusca myocardii. **Trich.** M 11/14.
47. M, 56, Białystok, **Clin.**: Mucinosis papulosa. **Anat.-path.**: Angiothrombosis vasorum parvorum cum haemorrhagia punctata cerebri. Degeneratio pigmentosa cellulae nervosae. Proliferatio microglae focalis medullae prolongatae. Intumescentia cerebri. Aneurysma et calcificatio focalis arteriarum baseos cerebri. Haemorrhagia subduralis regionis lobi frontalis et temporalis dextri. Trichinosis. Arteriosclerosis atheromatosa universalis. Degeneratio parenchymatosa myocardii, hepatis et renum. Hypertrophia concentrica et excentrica myocardii totius. **Trich.** M 12/14.
48. M, 78, Radom, **Clin.**: Insufficientia circulatoria acuta. Adenoma prostatae. Incontinentia urinae. Peritonitis diffusa e causa ignota. Arteriosclerosis univer-

salis. **Anat.-path.**: Dilatatio cordis totius. Lipomatosis cordis. Oedema pulmonum. Venostasis hepatis. Hypertrophia prostatae et intubatio vesicae urinariae. Cystitis chronica hypertrophica. **Trich.** M 10/14.

49. M, 39, Radom, **Clin.**: Vulnera capitis. Contusio cerebri. Susp. fractura baseos cranii. Hemiparesis sin. susp. Fractura ulnae dex. St. gravis. **Anat.-path.**: Vulnera capitis. Contusio cerebri. Fractura ulnae dex. **Trich.** M —, D 6/20.
50. M, 60, Białystok, **Clin.**: Peritonitis carcinomatosa proctosi et recti cum metastasibus. Insufficientia circulatoria. Status post coecostomiam. **Anat.-path.**: Adenocarcinoma gelatinosum recti cum obturatione. Infiltratio carcinomatodes vesicae urinariae et prostatae. Metastases carcinomatodes ad lymphonodulos pelvis minoris et lobi dextri hepatis. Glomerulonephritis chronica. Arteriosclerosis atheromatosa universalis. Endocarditis chronica fibrosa productiva valvulae bicuspidalis cum stenosi et insufficientia ostii venosi sinistri. Hypertrophia concentrica et excentrica musculi cordis totius praecipue sinistri. Degeneratio parenchymatosa et atrophia fusca myocardii et hepatis. Status post laparatomiam et coecostomiam recente factam. **Trich.** M 6/48.
51. M, 65, Białystok, **Clin.**: Carcinoma laryngis cum metastasibus ad mediastinum. **Anat.-path.**: Carcinoma microcellulare primarium pulmonis sinistri cum metastasibus ad lymphonodulos mediastini antici, postici hilorum pulmonum, supraclavicularium lateris sinistri et ad polum inferiorem renis sinistri. Carcinoma planoepitheliale paraepidermoidale primarium laryngis cum stenosi luminis eius. Supuratio et necrosis loco operationis. Status post tracheotomiam recente factam. Arteriosclerosis atheromatosa universalis praecipue arteriarum coronariarum cordis et aortae. Atrophia fusca myocardii et hepatis. **Trich.** M 24/14.
52. F, 30, Białystok, **Clin.**: Haematoma intracerebrale. Graviditas VIII m. **Anat.-path.**: Haemorrhagia massiva recens cerebri regionis lobi temporalis et capsulae internae hemisphaeriarae sinistrae. Oedema cerebri maioris gradus. Angiothrombosis vasorum parvorum cerebri. Encephalitis focalis praecipue perivascularis. **Trich.** M 10/14.
53. M, 64, Białystok, **Clin.**: Adenoma prostatae c. retentione urinae. Hepatitis. Uraemia. Cachexia. Status post cystostomiam. Insufficientia circulatoria. **Anat.-path.**: Adenoma prostatae et prostatitis chronica focalis. Status post cystostomiam. Cystopyelitis chronica exulcerans. Nephritis interstitialis chronica. Haemorrhagia subcapsularis renis sinistri. Hepatitis parenchymatosa acuta. Abscessus multiplices lobi inferioris pulmonis sinistri. Arteriosclerosis atheromatosa universalis. Dilatatio atriorum et ventriculorum cordis. Atrophia fusca myocardii. **Trich.** M 100/14.

As a rule, the diagnoses presented are no full reflection of the general health condition in examined cases. Because of space restriction some data are omitted, others were vague and incomplete. In some cases more reliable information could be obtained, as exemplified below; they are noteworthy in view of the disease evolution and fairly cotributory anamnestic data provided by the family members.

Case 1: 59-year-old woman (Z. D); from the case histories (Nos. 5247, 7306, 8395), recorded in the Ist Clinic of Internal Diseases of Medical School In Łódź (directed by prof. dr. J. Grott) it follows that the disease which ended fatally on Febr. 18, 1963, began in 1951 with gradually

increasing exertion dyspnoea and fleeting edema of the ankles; in 1952 it was joined by rest dyspnoea, pricking pains in the heart region, heart beating and increasing edema of the lower extremities, which did not subside upon rest. Because of these complaints the patient was treated ambulatorily and was hospitalized on several occasions. During her last, ca. 4-month stay in the clinic she was found to have a combined heart defect of mitral stenosis and insufficiency of bicuspid valve with marked circulatory decompensation. The clinical picture of circulatory insufficiency was dominated and markedly aggravated by batmotropic disturbances as indicated by ventricular fibrillation and premature variform ventricular excitations, which resulted in deficient pulse. Both quinidine and procaine amide failed to abolish these disturbances; as even low doses of enaleptic glycosides (digitalis, strophantine) had an aggravating effect on batmotropic disturbances, the treatment was extremely difficult. The only drug which showed an almost dramatic suppressing action on batmotropic disturbances was an alkaloid from *Raufolfia serpentina* root-imaline (Gilurytmal$^{R}$), administered by intravenous route [8]. This is evident from the electrocardiograms in figs. 1 and 2. As long as imaline was given the patient's health could be partially improved, but after 4-month stay in the clinic she died with the symptoms of peritonitis.

**Discussion**

The only common feature shared by the cases under discussion is the demonstration of *T. spiralis*. It is to be stressed that the mention about the regression of trichinellosis 36 years before death was given only once (case No. 20), and the routine post-morten examinations showed the presence of trichinellae only two times (cases Nos. 7, 47). This points to the fact that the disease, though fairly common in Poland, has not yet received sufficient attention.

The trichinellae detected by us prove that the people in question must have succumbed to infection which preceded by many years their death (the parasites were often more or less calcified) or that the infection was rather slight so as not to give in the first phase any appreciable clinical symptoms. Therefore, we can not identify the parasitologic proof of trichinellae with clinical trichinellosis, both acute and chronic. Nonetheless, we can not exclude the effect of invasion, even of slinght one, on the general health condition; its influence may be pronounced and direct, indirect or masked by other concomitant diseases. Such assumption is prompted by the results of our previous studies, as well as the fact that the parasite is able to live in the host's organism

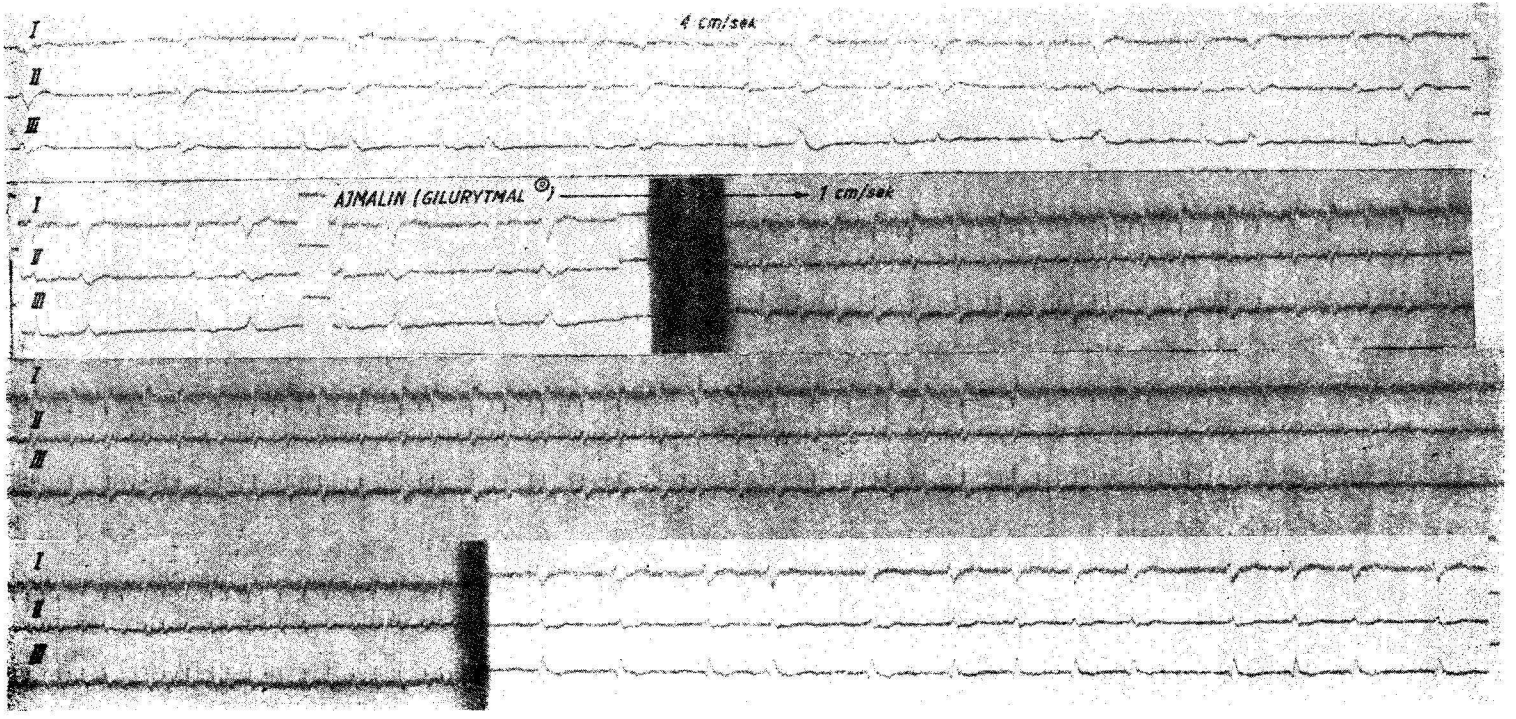


Fig. 1. Effect of intravenous imaline on batmotropic disturbances in case 1

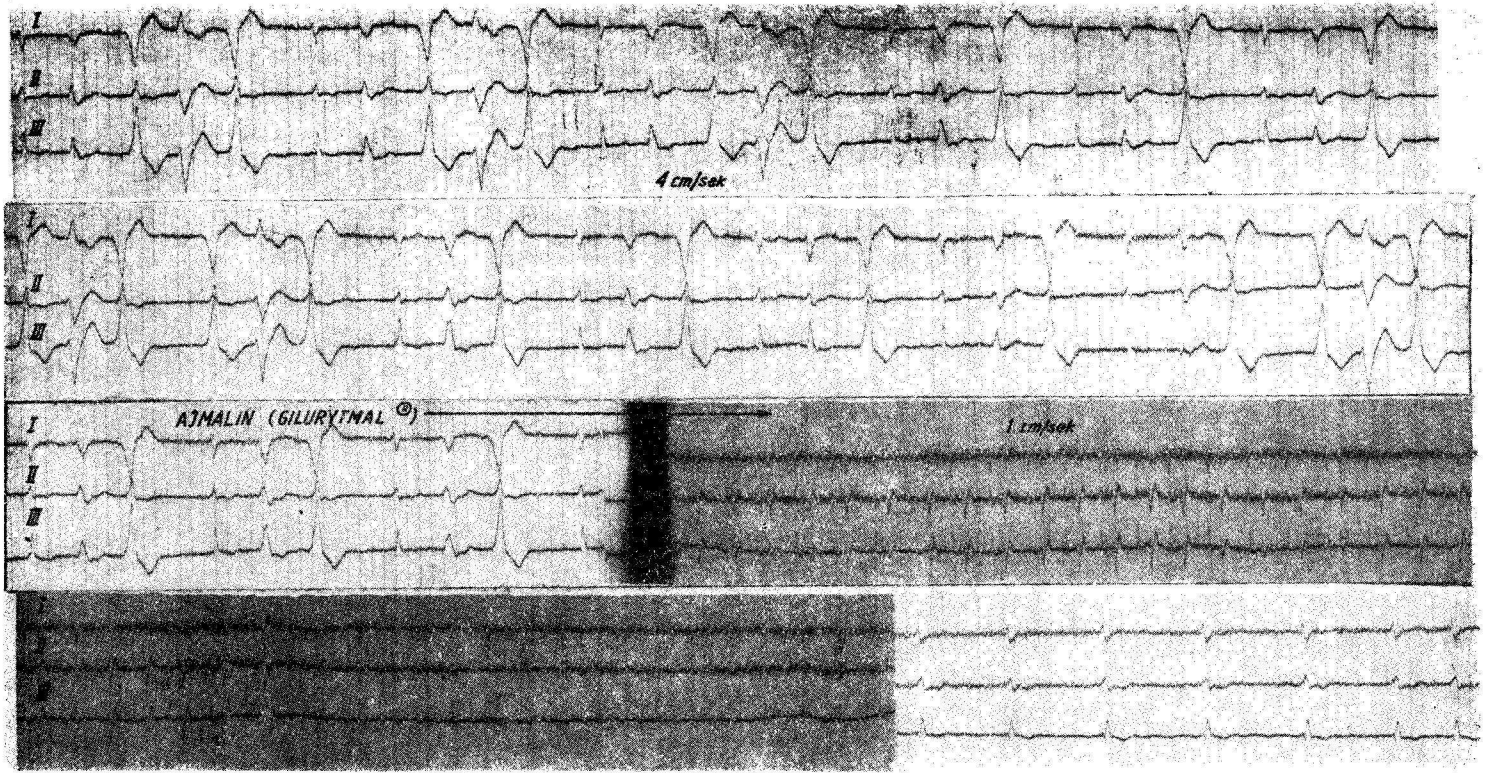


Fig. 2. Effect of intravenous imaline on tatmotropic disturbances in case 1

for many years and that its capsule constitutes no barrier for its action on the organism.

To secure a possible accurate analysis of our material we must take into account the advanced age of many patients, which considerably interferes with the interpretation of cause-effect relation, i. e., of *T. spiralis* infection to the recorded clinical and anatomo-pathologic changes. In spite of these limitations, the diagnoses made seem to be of interest. Strikingly high is the number (14 cases) of malignant tumors. Affections of the circulatory system were found in almost all cases, but taking in consideration the main reason of death they can be postulated in as many as 22 out the total number of 53 cases; only in the remaining 17 cases did we assume other reasons of death.

The concept of a correlation existing between trichinellosis and incidence of tumors was fairly often advanced by earlier investigators [2, 3, 6, 10, 11, etc.]. Later, only Doerr and Menzi [1], and Schmidt-Lange [7] maintained the point of view that Trichinellae may be, to a certain degree, an agent favouring the incidence of tumors, which could also be confirmed experimentally in rats. However, the majority of modern authors consider the coexistence of trichinellosis and tumors to be only fortuitous.

Although no binding conclusions can be drawn from our material we think it reasonable to emphasize the problem of the correlation between trichinellosis and neoplastic tissue proliferation.

In the light of present examinations the correlation of trichinellosis with circulatory diseases is more clear-cut. Besides, this is consistent with our previous findings, described in the first two parts. Such relationship seems at first hardly plausible. More conceivable are changes in the myocardium, whereas those of endocardium can not be readily explained on the background of trichinellosis; A case of this type is described more exhaustively (No. 1).

The preliminary analysis of clinical and anatomo-pathologic diagnosis in case No. 1 established beyond any doubt that death was caused by chronic endocarditis in the form of heart defect and chronic myocarditis. While the demostration of this fact met no difficulties, the analysis of the cause which led to endocarditis in an elderly person was not an easy matter. As the available case histories showed no trace of case--effect relationship, we have decided to gather accurate anamnestic data from the surviving family. The daughther's statements implied that the disease began not in 1951 but in 1950 and had a sudden onset, with pains in the joints and muscles of the whole body, and raised temperature. During the 3-week period of acute phase there was no edema or limitation of articular mobility. A significant fact shedding some light

on our investigations was that both daughters of the patient and some other members of the family, with whom she stayed in the country, were also affected by a similar illness, at approximately the same time, though to less degree. The treating physician made the diagnosis of influenza which subsided, but since that time the patient, her both daughters and one member of the family began to experience heart ailments.

As the picture of the disease from 1950 was suggestive of acute trichinellosis and the anamnesis pointed to frequent consumption of meat from not controlled slaughter the examinations of at least some of the surviving relatives seemed purposeful. Finally, only two daughters of the patient gave their consent to intradermal test with *T. spiralis* antigen, diluted at 1 : 5,000 and to physical examination. The results were fairly surprising; in both cases there were not only pronounced, early, positive intradermal reactions but also auscultatory changes characteristic of mitral defect (valvular insufficiency and stenosis).

In the observed cases, there was probably a genetically determined "topography" of the predisposition for the incidence of inflammatory changes in the endocardium. The question which emerges is whether chronic trichinellosis, which must have occurred, and which may be regarded as rheumatic disease, might have caused — in addition to myocardial and vascular affections — also inflammatory endocardial lesions and acquired heart defects? The same would also be true for our other cases (Nos. 15, 18 and 40).

According to the moderns concepts in cardiology, the most frequent cause of acute endocarditis is to be searched in acute rheumatic disease, etiopathogenesis of which is still obscure. Among several factors the major role is attributed to hyperergic and allergic reactions of the endocardium to various pathogenic stimuli. This is indicated by the experiments in animals sensitized with heterologous serum, with induction of hyperergic inflammation, the histopathologic picture of which is strongly suggestive of that in particular stages of rheumatic disease [9]. Without precluding a pathogenic part of hemolysing *Streptococcus,* viruses and satelitic system (virus-*Streptococcus*) in the acute rheumatic disease, still other factors may be involved, among which also that responsible for *T. spiralis* infection.

Chronic trichinellosis, a long-standing allergic disease, preceded by acute hyperergic phase, when occurring in the organism of a subject with genetically conditioned predisposition to "allergic topography" and the so-called manifestation of pathologic reactions in various tissues and organs, may under certain circumstances also lead to endocardial inflamation and acquired heart defects. This view is supported by case

No. 1 and obserwations in her two surviving daughters. Similarly, in other cases of circulatory diseases, given in our material, a certain role, if not essential, might have been played by *T. spiralis* infection. Hypergic and allergic reactions are known to play a role in pathogenesis of myo- and endocarditis, and the so-called "unspecific reaction of the connective tissue" (according to Hauss) also in aterosclerosis and myocardial infarcts. In the first part of our studies on chronic trichinellosis we have presented our pathogenetic concept of the disease. In all three hitherto published parts, concerning manifold clinical material there is a fairly marked consistence of circulatory diseases. We are aware of the fact that the problem we deal with is far from being elucidated and that further studies are required for its solution.

**Summary**

Case records and post-mortem protocolls were analysed in 53 cases of persons who died because of various reasons and were found in post-mortem examinations to harbour in their muscles *T. spiralis* larvae, although the majority of the available records contained no mention on this subject. Analysing the main reason of death we found an unexpectedly high number of malignant tumors (14 out of 53) and still higher of circulatory disorders (22 out of 53). The problem of tumors is raised and discussed shortly in the light of literature data, more attention being paid to the question of circulatory diseases. It appers that previous *Trichinella* infection (even years ago) may contribute to permanent myocardial lesions, heart infarcts, aterosclerosis ect.

Particular attention is deserved by case No. 1 concerning a patient who at the age of 46 years developed a chronic endocarditis with heart defect and chronic myocarditis, leading to death in the 59th year of life. As indicated by post-mortem anamnesis from the family members the heart ailments began after the regression of a disease, which was highly suggestive of trichinellosis, though at that time it was diagnosed as influenza. The same symptoms were exhibited simultaneously by her 2 daughters who after years showed a positive allergic test with *T. spiralis* antigen and signs characteristic of mitral defect. Assuming a genetically determined "topography" of predisposition for inflammator changes, in our case in the endocardium, we have advanced a hypothesis that chronic trichinellosis may also contribute to the occurrence of acquired heart defects.

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## PROBLEMY KLINICZNE PRZEWLEKŁEJ WŁOŚNICY U LUDZI. III. ANALIZA ROZPOZNAŃ KLINICZNYCH I ANATOMOPATOLOGICZNYCH W PRZYPADKACH WŁOŚNICY ROZPOZNANEJ POŚMIERTNIE

Z. KOZAR, E. SŁADKI

Zebrano i przeanalizowano historie choroby oraz protokoły sekcyjne 53 osób zmarłych z różnych przyczyn, u których w badaniach pośmiertnych wykryto w mięśniach *Trichinella spiralis*, mimo że w znacznej większości materiałów nie było żadnej na ten temat wzmianki. Analizując przyczynę zgonu, zwróciła naszą uwagę sprawa stosunkowo częstych (14 na 53) nowotworów złośliwych i jeszcze częstszych (22 na 53) schorzeń narządu krążenia. Podczas gdy zagadnienie nowotworów zostało tylko zasygnalizowane i krótko omówione w świetle piśmiennictwa, więcej uwagi poświęciliśmy sprawie chorób serca. Na tle przytoczonych rozważań wydaje się bardzo prawdopodobne, że przebyte nawet przed laty zarażenie włośniami może wywołać lub przyczyniać się do trwałych uszkodzeń mięśnia sercowego, zawałów serca, miażdżycy naczyń itp.

Na szczególną uwagę zasługuje przypadek nr 1, tj. chorej, u której w 46 roku życia zaczęło się rozwijać przewlekłe zapalenie wsierdzia pod postacią wady serca i przewlekłe zapalenie mięśnia sercowego, które doprowadziły do

śmierci w 59 roku życia. Jak wynikało z przeprowadzonych pośmiertnie wywiadów z członkami rodziny, dolegliwości ze strony serca datowały się od czasu przebycia ostrej choroby, bardzo przypominającej włośnicę, jakkolwiek była ona wtedy rozpoznana jako grypa. Równocześnie wśród podobnych objawów chorowały 2 córki zmarłej, u których stwierdziliśmy po latach dodatni odczyn alergiczny z antygenem *Trichinella* i charakterystyczne zmiany dla wady mitralnej serca. Przypominając tezę genetycznie uwarunkowanej „topografii" predyspozycji do powstania zmian zapalnych w konkretnym wypadku we wsierdziu, postawiliśmy w oparciu o te przypadki i 3 dalsze hipotezę, że włośnica przewlekła może się również przyczynić do powstawania wad nabytych serca.