

Trichinella spiralis and Breast Carcinoma – A Case Report

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ABSTRACT

Authors report about a patient with recurrent ductal invasive breast carcinoma and trichinosis. The patient underwent mastectomy of the left breast with evacuation of the axilla because of the cancer. Radiation therapy was received. An infestation with *Trichinella spiralis* was diagnosed two years after. The patient was treated with mebendazole. A local recurrence of the tumor was found on the chest wall six years after the surgery. Tumor excision was performed. Histological analysis pointed at a ductal invasive carcinoma with numerous parasites of *Trichinella spiralis* present within both the muscle and the tumor tissue. The finding of parasites in the tumor tissue witnesses in favor of infestation, and the parasite morphology preserved in the tumor shows at the protective effects of the cysts, i.e. preventing parasite necrosis.

Key words: *Trichinella spiralis*, breast carcinoma, case report

Introduction

Breast carcinoma is the most common malignant tumor type in women. Pathohistologically this is mostly the ductal invasive carcinoma¹. Multidisciplinary approach to treatment is a standard for majority of patients with breast carcinoma today.

There are three surgical options available for patients with invasive breast cancer: modified radical mastectomy, lumpectomy combined with radiation therapy, and breast reconstruction, during mastectomy or some time later². Radiation therapy is highly important for breast carcinoma treatment, irrelevant of the stage, because it decreases the risk of local recurrence³. Systematic therapy in the case of ductal invasive carcinoma is adjuvant chemotherapy and hormonal therapy with anti-estrogens⁴. Despite treatment, local tumor recurrence is experienced in 8–16% of the cases⁵.

Trichinella spiralis is a worm which develops its larval and adult stages in the same host. Infection is a consequence of eating raw meat containing encysted *Trichinella* larvae. Pathogenesis and pathological-anatomical changes are, as are disease symptoms in humans, a consequence of the biological cycle of *Trichinella*, and the extent of damage depends on the number of para-

sites which entered the organism as well as on the immunological condition of the host.

Major changes take place in striated muscles during larvae invasion. The infected muscle tissue, where characteristic curved larvae can be found, becomes edematous, loses the stripes and suffers from degeneration. It forms cysts around larvae. If larvae enter other organs, they cannot become encysted and therefore continue their migration causing reaction to inflammation and tissue necrosis^{6,7,8}.

Case Report

A 47-year old patient underwent a surgery in 1998 at the Clinic of Surgery of the Clinical Hospital Osijek. Mastectomy of the left breast was performed along with evacuation of the axilla due to the ductal invasive carcinoma, tumor size 1.6 cm, located in the central breast part. The carcinoma was of medium differentiation. Out of 10 analyzed axillary lymph nodes, none was infected by the tumor. Further, irradiation therapy of chest wall was received. No systematic chemotherapy was given.

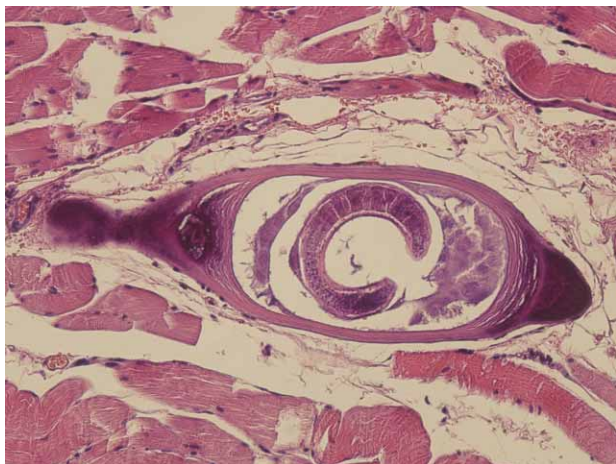


Fig. 1. *Trichinosis with a coiled, encysted parasite larva within skeletal muscle. Hematoxylin, eosin, x400.*

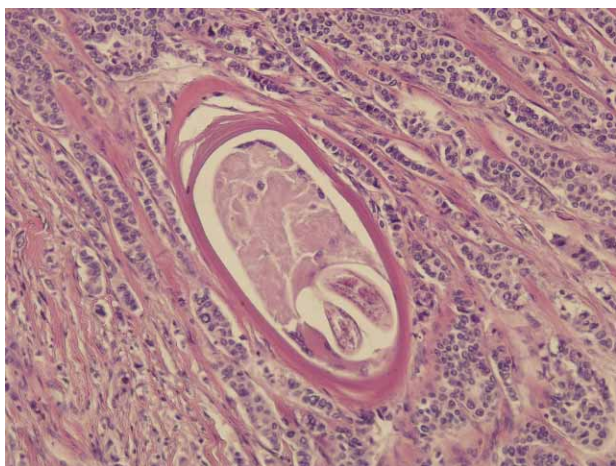


Fig. 2. *Encysted parasite larva within tumor (ductal invasive breast carcinoma). Hematoxylin, eosin, x400.*

Due to the hormonal dependence of the tumor, the patient underwent anti-estrogen therapy.

Two years after the operation the patient was treated at the Clinic for Infectious Diseases of the Clinical Hospital Osijek because of trichinosis. The treatment included peroral therapy with mebendazole along with symptomatic therapy.

Surgical checkups failed to indicate signs of local tumor recurrence on the chest wall. A new development, possible local tumor recurrence, was developed six year after the mastectomy, on the thoracic wall above the post-operational scar. Excision was performed along with the pathohistological analysis of the tumor. His-

tological analysis confirmed ductal invasive breast carcinoma with numerous parasites of *Trichinella spiralis* within the muscle tissue (Figure 1), and also within the tumor tissue (Figure 2).

Discussion

Trichinosis is known to humans for a long time, and is world-wide spread. Infestation is initiated by the ingestion of raw or poorly cooked meat containing encysted *Trichinella spiralis* larvae. Thanks to digestive fluids in the stomach, larvae are released. They enter mucous membrane of duodenum and jejunum where they grow to sexual maturity. The males die after fertilizing the females, the females start producing larvae 6–7 days after infestation. Juveniles enter the lymph and small intestine capillaries. They are distributed by blood throughout the body. They reach many organs, but they can survive only in striated muscles. The juveniles grow within muscles and the muscle tissue starts forming cysts. Encysted larvae can remain viable for decades. *Trichinella spiralis* causes specific humoral and cellular response. Antibodies IgG, IgM and IgA together with eosinophil are a dead end for the larvae^{6,7,8}.

In the reference literature there is not much data about the *Trichinella spiralis* presence related to breast cancer. There are reports on *Trichinella spiralis* presence in the cases of the carcinoma of the tongue⁹ and cancer of the larynx¹⁰, and on the possible influence of the parasites on the development of the tumors mentioned. Also, there is a report on an experiment in which *Trichinella spiralis* infection in muscles of white rats may have a carcinogenic effect on their muscles¹¹.

Ductal invasive breast carcinoma is in 10–30% multicentric, therefore resulting in local recurrence after mastectomy and despite irradiation therapy received⁵.

In the case of the 47-year-old patient, *Trichinella spiralis* larvae were transported by blood into the striated muscles of the chest wall and into the breast carcinoma recurrence formed after mastectomy. Cysts were formed around *Trichinella* larvae both in the muscle and tumor tissue. Biological potential of breast carcinoma tissue with respect to invasiveness and destruction of surrounding structures failed to prevent the formation of cysts i.e. the tumor failed to destroy parasite larvae.

It may be concluded that the finding of the parasite in the tumor tissue speaks in favor of *Trichinella spiralis* infestation, and the morphology of parasites in the tumor points at protective effects of the cysts, i.e. preventing parasite necrosis.

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TRICHINELLA SPIRALIS I KARCINOM DOJKE – PRIKAZ SLUČAJA

SAŽETAK

Autori prikazuju bolesnicu sa recidivirajućim duktalnim invazivnim karcinomom dojke i trihinelozom. Kod bolesnice je učinjena mastektomija lijeve dojke sa evakuacijom aksile zbog karcinoma. Provedena je i terapija zračenjem. Dvije godine nakon operacije nastaje infestacija *Trichinella spiralis*. Bolesnica je liječena mebendazolom. Šest godina nakon operacije razvija se lokalni recidiv tumora na prsnoj stijenci. Učinjena je ekscizija tumora. Histološkom analizom ustanovljen je duktalni invazivni karcinom dojke sa prisutnim brojnim parazitima *Trichinella spiralis* koji se nalaze unutar mišićnog tkiva, ali i unutar samog tumorskog tkiva. Nalaz parazita u tkivu tumora ide u prilog infestacije, a očuvana morfologija parazita u tumoru ukazuje na zaštitne efekte njegove čahure, koja je spriječila nekrozu parazita.