Course and outcome of solitary erythema migrans in patients treated for breast cancer

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Introduction

The most frequent manifestation of early Lyme borreliosis is erythema migrans, the typical skin lesion which develops after the bite of an infected tick. Later on, various clinical manifestations of early disseminated or late disease may appear. The course and outcome of the illness depend upon the causative agent and host immune response. In immunocompromised patients infections are more frequent, and have often a more severe course and less favourable outcome than in immunocompetent persons.

Information of the course and outcome of Lyme borreliosis in immunocompromised persons is limited. Herein we present data on patients with breast cancer who were immunocompromised due to aggressive treatment.

Materials and Methods

Information was obtained from a database of over 7000 erythema migrans patient examined between 1997 and 2011 at the Department of Infectious Diseases, University Medical Centre Ljubljana, Slovenia. The data were acquired prospectively using a structured questionnaire. Erythema migrans was defined according to modified CDC criteria. During 15-year period seven patients, aged 56 (45–70) years, treated for breast cancer, were diagnosed with typical solitary erythema migrans. At presentation, four patients were receiving chemotherapy (three out of four also tamoxifen), two radiotherapy (one of them received also trastuzumab and anastrozole), and one biological therapy (trastuzumab and tamoxifen). Their pre-treatment characteristics and outcome after treatment were assessed at initial examination and at 2, 6, and 12 months follow up visits and compared with 21 immunocompetent, age-, sex- and antibiotic treatment - matched subjects diagnosed with erythema migrans in the same year. Patients were evaluated clinically, and by laboratory (erythrocyte sedimentation rate, blood cell counts, liver function tests) and microbiological methods (serology, *Borrelia* skin and blood culture). Patients with breast cancer were treated for erythema migrans with oral doxycycline (100 mg b.i.d. for 15 days; one patient), azithromycin (500 mg b.i.d. on the first day, followed by 500 mg o.d. for four days; two patients), or cefuroxime-axetil (500 mg b.i.d. for 15 days; four patients). Treatment failure was defined as: appearance/persistence of objective extracutaneous manifestations of Lyme borrelisis, and/or pronounced symptoms, persistence of erythema migrans for > 6 weeks after the beginning of antibiotic treatment or persistence of *Borreliae* in skin after treatment.

Results

Comparison of characteristics at presentation.

Comparison of basic clinical characteristics in patients with deficient and normal immunity before treatment revealed analogous findings for the frequency of tick bite, interval from tick-bite to the onset of erythema migrans, duration of erythema migrans prior to diagnosis and its largest diameter, presence of systemic symptoms, seropositivity, and *Borrelia* skin culture result.

However, abnormal results of several basic laboratory tests were found more frequently in patients with breast cancer.

Course and outcome.

Duration of erythema migrans after the beginning of antibiotic treatment and the course and outcome during 12 months follow up were comparable. Of the 28 subjects in both patient groups, 27 had complete response to antibiotic treatment for erythema migrans. In one patient, treated with radiotherapy, monoclonal antibody (trastuzumab) and aromatase inhibitor (anastrozole) for her breast cancer, treatment failure was registered: *B. Burgdorferi* sensu lato was found by culture in skin biopsy specimen two months after therapy with azithromycin; this patient was treated successfully with additional two weeks of doxycycline.

Conclusions

The course and outcome of early Lyme borreliosis in patients, immunocompromised for breast cancer and its treatment, were favourable and were comparable to the course and outcome of erythema migrans in sex-, age- and antibiotic treatment-matched immunocompetent patients.

References

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