DIFFERENTIAL DIAGNOSIS OF ERYTHEMA MIGRANS

K. Weber

ABSTRACT

The diagnosis of erythema migrans (EM) has to be made clinically as immunological tests are usually negative. It is possible to cultivate *Borrelia burgdorferi* from EM lesions, however this test is being done only in certain laboratories, it is time-consuming and expensive. A certain number of skin conditions may mimic EM, therefore a sufficient experience in dermatology is necessary.

KEY WORDS

erythema migrans, differential diagnosis, clinical presentation

DEFINITION OF ERYTHEMA MIGRANS

Erythema migrans (EM) is usually an expanding, non-scaling, non-raised homogeneous (diffuse) or more often centrally clearing erythema; its mainly bright-red border mostly has a width of 1 - 2 cm and is outlined sharply and somewhat irregularly. A central efflorescence consisting of a small papule up to a rather large plaque can sometimes be observed. The size varies considerably between about 5 and more than 65 cm. The duration ranges from 0.5 to 104 weeks. Atypical forms such as an elongated, irregular, diffuse or even spotted form is not uncommon. The minimal EM has a size of less than 5 cm and is either a stationary EM („erythema non-migrans") or represents the very small initial typical expanding EM.

DIFFERENTIAL DIAGNOSIS

INSECT BITE REACTION

An early insect bite reaction (IBR) may resemble many characteristics of EM: it is an expanding, homogeneous, non-scaling, bright-red erythema. Both EM and IBR may occasionally be slightly raised. In other words, it is often virtually impossible to distinguish both conditions within the first days after their appearance. If the patient insists that he/she was stung by a flying insect in the middle of the expanding erythema, an IBR may be assumed rather than EM. However, also some patients with EM claim that they were stung by an insect although they did not notice it; it is important to clarify this point with the patient. The most important point concerning differential diagnosis of

these two conditions is time: an IBR will usually diminish within four to five days at the most, whereas EM usually continues to expand beyond this time. The decision to initiate antibiotic therapy can mostly be delayed under these circumstances until about the fifth day.

ERYSIPELAS

Typical erysipelas is characterized by a diffuse, bright-red peripherally expanding erythema with a sharp but irregular border. However, in relation to a site of entry of the causative bacteria erysipelas develops most frequently either on the foot (note fissures between the toes) or on the face (infection usually starts in the nose). In adults, the face is a very unusual site for EM. It can be difficult to distinguish between an initial erysipelas and EM on the distal lower leg. Elongated erythema possibly extending from the forefoot in connection to fissured toe webs associated with leucocytosis would favor the diagnosis of erysipelas. In case of doubt, I presently recommend cefuroxime axetil because it is effective for both conditions.

SUPERFICIAL DERMATOMYCOSIS

Superficial dermatomycosis (SD) represents a problem only if it is located at certain sites such as the groin, if it is not (yet) associated with the typical papulopustules at its border or if it is pretreated with topical corticosteroids. Nevertheless, distinction is nearly always possible because SD is scaling which is quite unusual for EM. An attempt to culture dermatophytes should be made, but the result of the culture would only be available after one or two weeks. Topical antimycotic preparations will usually improve SD within one to two weeks.

ECZEMA

Eczema, characterized by scaling not sharply demarcated erythemas, often associated with papulovesicles only presents problems under special circumstances. It is the rather unusual solitary eczema which presents as homogeneous solitary scaling erythema which most often creates problems. This type of nummular eczema is usually non-expanding and responds to topical corticosteroids within days. It may occur after an insect bite; in this case, eczema often does not extend beyond a size of 5 cm.

REACTION TO ANTIGEN INJECTION

An immunization might induce an expanding non-scaling erythema indistinguishable from EM, but the history of an injection will lead to the correct diagnosis.

GRANULOMA ANNULARE

The most characteristic feature of granuloma annulare (GA) is the presence of erythematous papules, mostly located at the border of non-scaling erythemas which are often about 1 to 2 cm in diameter. The presence of peripheral papules and multiple sites makes it easy to distinguish GA from EM in most instances. Moreover, GA and EM have different histologic patterns.

ERYTHEMA ANNULARE CENTRIFUGUM

Erythema annulare centrifugum (EAC) typically consists of multiple non-scaling often slightly raised erythemas. It may resemble multiple EM lesions. However, the typical lesion of EAC is mostly not truly annular. Moreover, EAC lesions tend to come and go for a comparably long period of time. Multiple EM lesions are nearly always associated with an elevated antibody titre against *Borrelia burgdorferi*, whereas EAC is not.

DRUG ERUPTION

In rare cases a drug eruption may resemble EM and, in this instance, consists of a variety of bright-red, non-scaling, sharply demarcated erythemas. The more common, so-called fixed drug eruption (FDE) often has a size of about 2 to 5 cm in diameter. The solitary FDE lesions are frequently found on the penis or vulva where EM is quite uncommon. FDE may be bullous and erosive which is quite unusual for EM unless it is associated with a superinfected reaction to a tick bite. I have seen about 500 cases of EM but never a patient with vesicles or bullae although this is reported in the literature. A history of drug intake is important for the diagnosis of a drug eruption.

ERYSIPELOID

This condition typically develops around a laceration on the hand as a bright-red erythema with a tendency to central clearing and a sharply demarcated peripherally-expanding border, very

similar to EM. However, EM on the hand is very unusual. In addition, people with erysipeloid have had contact with fresh meat or fish by which the causative bacteria of the erysipelothrix group are transmitted.

NECROLYTIC MIGRATORY ERYTHEMA

Necrolytic Migratory Erythema (NME) is a rare paraneoplastic condition due to a glucagon-producing carcinoma. It is characterized by several peripherally-expanding bizarre erythemas with blisters, crusts and scales. NME and EM are clinically different but are of similar duration.

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AUTHOR'S ADDRESS

Klaus Weber, MD, Dermatological Private Practice, Rosenstrasse 6, D-80331 Munich, Germany