INFECTIOUS DISEASES (BACTERIAL, FUNGAL, VIRAL, PARASITIC, INFESTATIONS)

UPDATE ON BURULI ULCER

FILIPPO LA ROSA [(1)]

MARCOM, MEDAD, LONDON, United Kingdom [(1)]

The Buruli Ulcer (BU) is a necrotizing infection of skin and soft tissue caused by Mycobacterium Ulcerans classified as a Neglected Tropical Disease (NTD). The organism belongs to the family of bacteria that causes tuberculosis and leprosy.
BU has been reported in 33 countries in Africa, the Americas, Asia and the Western Pacific. In Africa, the highest incidence rates are reported from the west African countries of Benin, Cote d'Ivoire, and Ghana (a recent study tried to explain the spread of disease in Africa using bacterial population genomics of M. Ulcerans); other important areas are in Australia (Bairnsdale Ulcer/ Daintree Ulcer), French Guyana, Peru, and Papua-New Guinea, China and Japan.
In Africa about 48% of those affected are children under 15 years, whereas in Australia, 10% are children under 15 years and in Japan, 19% are children under 15 years.
Lesions frequently occur in the limbs: 35% on the upper limbs, 55% on the lower limbs, and 10% on the other parts of the body.
Mycobacterium Ulcerans grows at temperatures between 29–33 °C and a low 2.5% oxygen concentration to grow. The organism produces a unique toxin – Mycolactone – which causes tissue damage and inhibits the immune response.
The exact mode of transmission of M Ulcerans is still unknown. The most plausible route is through traumatic skin lesions recently contaminated by M Ulcerans.
BU often starts as a painless swelling (nodule). It can also initially present as a large painless area of induration (plaque) or a diffuse painless swelling of the legs, arms or face (oedema) could progress in 4 weeks to an ulcer with the classical, undermined borders. The Mycolactone toxin with its local immunosuppressive properties enables the disease to progress with no pain and fever. In some cases, bones and muscles are involved in the disease-causing gross deformities. Recent data suggested an implication of genetic susceptibility to explain the progression of the disease.
Some laboratory methods (IS2404 polymerase chain reaction (PCR), direct microscopy, histopathology and culture) are helpful to confirm the clinical suspect of BU.
A combination of antibiotics given for 8 weeks are usually used to treat the patients with BU: Rifampicin (10 mg/kg once daily) plus Streptomycin (15 mg/kg once daily); or Rifampicin (10 mg/kg once daily) plus Clarithromycin (7.5 mg/kg twice daily). The second one (Rifampicin plus Clarithromycin) is considered the safer option for pregnant women.
The wound management and surgery are used to speed up the healing thereby shortening the duration of hospitalization and physiotherapy is crucial in severe cases to prevent disability.

Heat therapy and hyperbaric oxygen therapy have been proposed as supportive measures. The WHO recently drew the 5 years research priorities for BU (Development of an oral antibiotic treatment, Development of rapid diagnostic tests to detect Mycolactone as a diagnostic tool and Mode of transmission) and endorsed the integrated approach to the control of skin-related NTDs to improve BU detection and its management as well.
An update overview on the Buruli Ulcer will be discussed