Causes, Incidence, and Associated Factors of Fatal Infections in Systemic Lupus Erythematosus Patients Treated with First Course of Cyclophosphamide

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Background: Cyclophosphamide (Cy) is a highly effective immunosuppressive agent for treatment of systemic lupus erythematosus (SLE). Nonetheless, Cy is known to increase a risk of infection.

Objective: To determine causes, incidence, and associated factor of fatal infection in SLE patients receiving 1st course Cy.

Methods: We retrospectively reviewed medical records of SLE patients who were seen at Division of Rheumatology, Chiang Mai University and received 1st course Cy. Severe infection (infection required intravenous antibiotic or hospital admission) and opportunistic infection data were recorded from the initiation of Cy to 6 months after Cy was discontinued.

Results: Over 20 years, 301 (285 female) out of 875 (34.4%) SLE patients received 1st course Cy; whereas, 241 patients (80.1%) received this 1st course Cy within 1st year of SLE diagnosis. Their mean±SD age at SLE diagnosis and mSLEDAI score was 30.2±12.0 years and 13.3±6.57 years, respectively. The mean Cy and prednisolone dosage at one month prior to infection were 1,012.8±400.1 mg/month and 38.7±12.7 mg/day, respectively. The mean duration of 1st course Cy was 7.7±7.6 months. There were 116 severe infections and 31 opportunistic infections. Of these, 12 infections (8.16%) resulted in death, and 10 occurred within 1st year of SLE diagnosis. The incidence rate of fatal infection during 1st Cy course was 3.5 /100-person-year. The causes of fatal infection were pneumonia in 5 (3 Acinetobacter baumannii, 1 Staphylococcus aureus, and 1 Pseudomonas aeruginosa), Salmonella spp. Septicemia in 3, and one in each of disseminated Candida albican, Cryptococcus neoformans meningitis, Escherichia coli urinary tract infection, and soft tissue infection from Pseudomonas aeruginosa. Mean disease duration from SLE diagnosis to initiation Cy, and from initiation of Cy to fatal infection was 7.7±16.6 and 2.9±2.7 months, respectively. Mean disease duration from initiation Cy to 1st episode of non-fatal infection was 6.4±19.5 months (p=0.58). Age at diagnosis was the only factor of difference between patients with and without fatal infection, 37.8±12.4 vs 29.9±11.9 years, p=0.026.

Conclusion: The incidence of fatal incidence is high in SLE patients receiving 1st course Cy within 1st year of SLE diagnosis. Whilst, pneumonia is the most common site of infection. Also, older age at diagnosis is associated with fatal infection in those receiving 1st course Cy.

Keywords: SLE, Cyclophosphamide, infection