XX AINI Congress

Regina Palace Hotel
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30 September - 3 October 2010

ASSOCIAZIONE ITALIANA DI NEUROIMMUNOLOGIA

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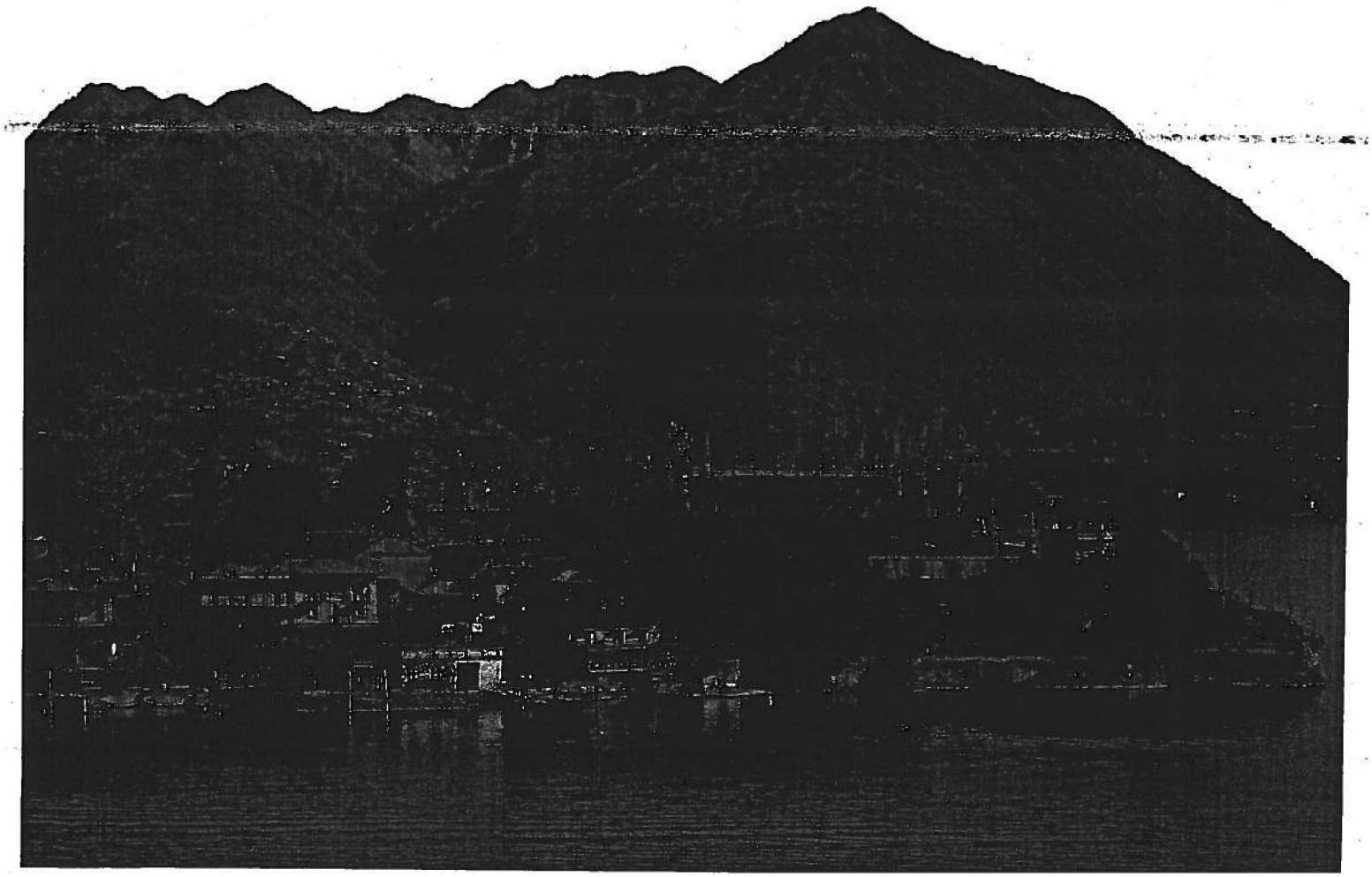

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9 - Neutrophil contribution and immunoglobulin effect on Dark Agouti Experimental Autoimmune Encephalomyelitis -

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While Multiple Sclerosis (MS) is generally considered a chronic inflammatory disease mediated by autoreactive CD4+ T cells, few attention has been given to the contribution of neutrophils, relevant members of the innate immunity. Neutrophils belong to polymorphonuclear cell family and are mostly involved in the acute phase of inflammation resulting from bacterial infections. Both the increase in priming/activation feature of neutrophils in exacerbating MS patients and the delay in the disease relapse in a chronic MS mouse model depleted of neutrophils, have suggested us to study their role in Dark Agouti EAE rats.

In order to keep the neutrophil count low, EAE rats were treated every other day with 0,5 mg/kg of rabbit anti-rat neutrophil antiserum (a-NEU) from 13 to 35 days post EAE induction (dpi) while normal rabbit serum (NRS) was administered as control serum. Clinical score was evaluated daily and body weight weekly. At 35 dpi animals were sacrificed, flow cytometric analysis were performed on spleen while histological evaluation was performed on both spleen and spinal cord.

Respect to untreated animals, EAE rats presented an increase in circulating neutrophils at 8 and 13 dpi together with a significant reduction in circulating lymphocytes by 13 dpi. At 13 dpi the a-NEU treatment depleted 60-70% of circulating neutrophils in EAE animals without affecting the lymphocyte count while NRS had no effect on any leukocyte population. EAE rats showed a decreased body weight vs. the controls while no significant differences could be observed between EAE and a-NEU or NRS treated animals. Interestingly NRS but not a-NEU administration induced neurological sign improvement respect to EAE rats.

Flow cytometric analysis on spleen revealed that there were no differences in the percentage of CD4+ and CD8+ T-cells between the three groups of EAE animals and the controls while an increase in the neutrophils was shown vs. the controls although it could not be appreciated by means of Hematoxilin-Eosin staining.

Moreover histological evaluation of the spinal cord did not reveal any appreciable differences among EAE and a -NEU/NRS treated animals.

Our preliminary study suggests that neutrophils may not have a relevant role in Dark Agouti EAE clinical progression while NRS treatment positively influences the disease course. Interestingly the NRS dose used is significantly lower than the human antibodies are used in the clinical therapy of MS patients.

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