Important role of corticosteroids in chronic granulomatous disease

Recently, Arimura *et al.* (2006) published an interesting case report about a disseminated lethal varicella-zoster virus infection in a patient with chronic granulomatous disease (CGD) who suffered from CGD-associated inflammatory bowel disease (IBD), and was therefore treated with high doses of corticosteroids. The authors point out an important potential side effect of steroids that is not related to CGD. CGD patients are not more susceptible to viral infections than healthy individuals. The authors conclude properly that IBD secondary to CGD should be differentiated from idiopathic IBD.

However, the second part of the authors' conclusion stating that immunosuppressive drugs, including corticosteroids, should be avoided in the treatment of CGD is inappropriate and unjustified. On the contrary, steroids play an important role in the treatment of CGD in several respects.

Relatively high doses of steroids [in the range of 1 mg prednisolone (kg body weight)⁻¹ daily] in addition to appropriate antimicrobial treatment can be life saving when CGD patients have inhaled *Aspergillus* spores that germinate in the airways and cause a clinical picture strongly resembling severe hypersensitivity pneumonitis (S. M. Holland, unpublished results). The anti-inflammatory treatment can prevent the need for artificial respiration and the development of adult respiratory distress syndrome. Some authors consider using steroids in cases of refractory opportunistic infections in CGD provided antimicrobial drugs are sufficiently administered (Okano *et al.*, 1999; Yamazaki-Nakashimada *et al.*, 2006). This can be helpful because CGD patients tend to develop granulomas, pronounced inflammatory infiltrates, thick walls

around abscesses and organ fibroses. Steroids can confine such deleterious inflammation.

In CGD inflammatory infiltrates, granuloma formation and fibroses can also occur in the absence of overt infection, and can be organ damaging and even life threatening. Again steroids are an important option after opportunistic infections are excluded as carefully as possible and under appropriate prophylaxis (Roesler *et al.*, 2005). CGD-associated urinary obstructions and IBD also remain established indications for the use of steroids because side effects as described by Arimura *et al.* (2006) are rare and not specific for CGD (Marciano *et al.*, 2004; Danziger *et al.*, 1993). Finally, low doses of steroids may be helpful in treating loss of appetite and weight loss due to subclinical IBD, in treating disturbed wound healing and anal fistula formation.

Arimura *et al.* (2006) mention bone marrow transplantation and gene therapy as alternatives to immunosuppression in CGD. However, many CGD patients are doing remarkably well when under regular surveillance and prophylaxis. The prognosis with conventional therapy can be characterized as fair (ESID, 2006). Bone marrow transplantation is an option for patients with persisting problems, but remains risky. Pros and cons are difficult to assess, and it requires a human leukocyte antigen-matched donor. Gene therapy is certainly desired, but far from applicable as a routine approach.

Joachim Roesler

University Clinic Carl Gustav Carus,
Department of Pediatrics, Fetscherstr. 74,
01307 Dresden, Germany

Correspondence: Joachim Roesler
(roeslerj@rcs.urz.tu-dresden.de)

Arimura, Y., Goto, A., Yamashita, K., Endo, T., Ikeda, H., Tanaka, K., Tsutsumi, H., Shinomura, Y. & Imai, K. (2006). Intractable colitis associated with chronic granulomatous disease. *J Med Microbiol* 55, 1587–1590.

Danziger, R. N., Goren, A. T., Becker, J., Greene, J. M. & Douglas, S. D. (1993). Outpatient management with oral corticosteroid therapy for obstructive conditions in chronic granulomatous disease. *J Pediatr* 122, 303–305.

ESID (2006). *European Society of Immunodeficiency Disease Meeting, Budapest, Hungary, 4–7/10/2006.*

Marciano, B. E., Rosenzweig, S. D., Kleiner, D. E., Anderson, V. L., Darnell, D. N., Anaya-O'Brien, S., Hilligoss, D. M., Malech, H. L. & other authors (2004). Gastrointestinal involvement in chronic granulomatous disease. *Pediatrics* 114, 462–468.

Okano, M., Yamada, M., Ohtsu, M., Kawamura, N., Sakiyama, Y., Aoi, K., Gandoh, S., Fujita, M. & Kobayashi, K. (1999). Successful treatment with methylprednisolone pulse therapy for a life-threatening pulmonary insufficiency in a patient with chronic granulomatous disease following pulmonary invasive aspergillosis and *Burkholderia cepacia* infection. *Respiration* 66, 551–554.

Roesler, J., Koch, A., Porksen, G., von Bernuth, H., Brenner, S., Hahn, G., Fischer, R., Lorenz, N., Gahr, M. & Rosen-Wolff, A. (2005). Benefit assessment of preventive medical check-ups in patients suffering from chronic granulomatous disease (CGD). *J Eval Clin Pract* 11, 513–521.

Yamazaki-Nakashimada, M. A., Stiehm, E. R., Pietropaolo-Cienfuegos, D., Hernandez-Bautista, V. & Espinosa-Rosales, F. (2006). Corticosteroid therapy for refractory infections in chronic granulomatous disease: case reports and review of the literature. *Ann Allergy Asthma Immunol* 97, 257–261.

DOI 10.1099/jmm.0.47250-0