

## Serum cytokine in response to chemo-radiotherapy for Hodgkin's disease

Fabrizio Villani<sup>1</sup>, Alessandra Busia<sup>1</sup>, Massimiliano Villani<sup>1</sup>, Chiara Vismara<sup>2</sup>, Simonetta Viviani<sup>3</sup>, and Valeria Bonfante<sup>3</sup>

<sup>1</sup>UO di Pneumologia e Fisiopatologia Respiratoria, <sup>2</sup>UO Analisi Clinica e Microbiologia, and <sup>3</sup>UO Oncologia Medica, Fondazione IRCCS, Istituto Nazionale Tumori, Milan, Italy

---

### ABSTRACT

---

**Aims and background.** Mediastinal radiotherapy and multiple-drug chemotherapy, including bleomycin employed in the treatment of Hodgkin's disease, can produce lung toxicity leading to fibrosis. There is increasing evidence of the involvement in the fibrosing process of different cytokines and growth factors such as TNF-alfa, IL-1 beta, TGF-beta and PDGF.

**Material and methods.** In a pilot study, we evaluated lung function in 20 patients suffering from Hodgkin's disease, mainly in stage II A, submitted to multiple-drug chemotherapy including bleomycin (ABVD) and mediastinal radiotherapy and correlated its modifications with serum concentration of the cytokines determined by immunoenzymatic assay. Spirometry and transfer lung function for carbon monoxide (DLCO) were performed before, at the end of chemotherapy, at the end of radiotherapy and after a follow-up of 6 and 12 months.

**Results.** DLCO decreased at the end of the combined treatment and then remained constantly decreased. TNF-alfa, TGF-beta and PDGF-alfa concentrations did not change, whereas IL-1 beta significantly increased after the completion of the combined treatment and after a follow-up of 6-months and then declined to normal values after 12 months. The serum concentration of the cytokine was significantly higher in patients who had a DLCO <75% of predicted after 1 year than in patients with a DLCO >75%.

**Conclusions.** The results indicate a potential role of IL-1 beta in the pathogenesis of chemoradiotherapy-induced lung toxicity, which needs to be confirmed in a larger patient population.

---

**Key words:** cytokines, Hodgkin's disease, lung toxicity.

Correspondence to: Dr Fabrizio Villani, UO Pneumologia e Fisiopatologia Respiratoria, Fondazione IRCCS Istituto Nazionale dei Tumori, Via Venezian 1, 20133 Milan, Italy.  
Tel +39-02-2390-2289;  
fax +39-02-2390-2513;  
e-mail  
fabrizio.villani@istitutotumori.mi.it

Received July 30, 2008;  
accepted August 29, 2008.