

عنوان مقاله:

Evaluation of renal damage in a bleomycin-induced murine model of systemic sclerosis

محل انتشار:

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نویسندگان:

Dulce Pérez-Figueroa - *Laboratorio de Fibrosis y Cáncer, Facultad de Medicina y Cirugía, Universidad Autónoma Benito Juárez de Oaxaca, Oaxaca, México*

Edilburga Reyes-Jiménez - *Laboratorio de Fibrosis y Cáncer, Facultad de Medicina y Cirugía, Universidad Autónoma Benito Juárez de Oaxaca, Oaxaca, México*

Juan Velázquez-Enríquez - *Laboratorio de Fibrosis y Cáncer, Facultad de Medicina y Cirugía, Universidad Autónoma Benito Juárez de Oaxaca, Oaxaca, México*

Itayetzi Reyes-Avendaño - *Laboratorio de Fibrosis y Cáncer, Facultad de Medicina y Cirugía, Universidad Autónoma Benito Juárez de Oaxaca, Oaxaca, México*

Karina González-García - *Laboratorio de Fibrosis y Cáncer, Facultad de Medicina y Cirugía, Universidad Autónoma Benito Juárez de Oaxaca, Oaxaca, México*

Saúl Villa-Treviño - *Departamento de Biología Celular, Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, Ciudad de México, México*

Honorio Torres-Aguilar - *Facultad de Ciencias Químicas, Universidad Autónoma Benito Juárez de Oaxaca, Oaxaca, México*

Rafael Baltiérrez-Hoyos - *Laboratorio de Fibrosis y Cáncer, Facultad de Medicina y Cirugía, Universidad Autónoma Benito Juárez de Oaxaca, Oaxaca, México*

Verónica Vásquez-Garzón - *Laboratorio de Fibrosis y Cáncer, Facultad de Medicina y Cirugía, Universidad Autónoma Benito Juárez de Oaxaca, Oaxaca, México*

خلاصه مقاله:

Objective(s): Systemic sclerosis (SSc) is an autoimmune disease of unknown etiology with a high mortality rate. Renal crisis has been reported as one of the predictors of early mortality in these patients. The present study was performed to evaluate bleomycin-induced SSc using an osmotic minipump as a possible model for the analysis of renal damage in SSc. Materials and Methods: Male CD1 mice were implanted with osmotic minipumps loaded with saline or bleomycin and sacrificed at 6 and 14 days. Histopathological analysis was performed through hematoxylin and eosin (H&E) and Masson's trichrome staining. The expression of endothelin 1 (ET-1), inducible nitric oxide synthase (iNOS), transforming growth factor β (TGF- β), and λ -hydroxy- γ -deoxyguanosine (λ -OHdG) was also evaluated by

immunohistochemistry. Results: The administration of bleomycin induced a decrease in the length of Bowman's space ($3.6 \mu\text{m}$, $P < 0.001$); an increase in collagen deposition (14.6% , $P < 0.001$); and an increase in the expression of ET-1 (7.5% , $P < 0.001$), iNOS (10.1% , $P < 0.001$), λ -OHdG (161 nuclei, $P < 0.001$), and TGF- β ($2.4\% \mu\text{m}$, $P < 0.001$) on Day 6. On Day 14, a decrease in the length of Bowman's space ($2.6 \mu\text{m}$, $P < 0.001$); increased collagen deposition (13.4% , $P < 0.001$); and increased expression of ET-1 (2.7% , $P < 0.001$), iNOS (10.1% , $P < 0.001$), λ -OHdG (133 nuclei, $P < 0.001$), and TGF- β (0.6% , $P < 0.001$) were also observed. Conclusion: Systemic administration of bleomycin via an osmotic minipump produces histopathological changes in the kidneys, similar to kidney damage in SSc. Therefore, this model would allow the study of molecular alterations associated with SSc-related renal damage.

کلمات کلیدی:

Bleomycin, Fibrosis, Kidney, Oxidative stress, Systemic sclerosis, Scleroderma, Scleroderma renal crisis

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