Silicosis Associated with Crescentic IgA Mesangial Nephropathy

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Dear Sir,

IgA mesangial nephropathy can be observed in association with diseases involving IgA-secreting epithelia, including the lungs [1]. On the other hand, exposure to silica can result in renal function abnormalities, so called 'silicon nephropathy' [2]. But as far as we know, an association silicosis-IgA mesangial nephropathy has not yet been described.

Three men, (50, 67 and 69 years old) have had a history of pulmonary silicosis diagnosed 10, 20 and 23 years ago. They were seen because of a recent discovery of a glomerular type proteinuria ranging from 1.1 to 3 g/24 h, with microscopic hematuria, mild renal failure in 2 cases (serum creatinine levels: 165 and 210 $\mu\text{mol/l}$) and high blood pressure (2 cases). Light microscopic examination of a kidney biopsy specimen showed in the 3 cases an increase in mesangial matrix associated in 1 case with focal and segmental proliferation of mesangial cells and extracapillary proliferation in 20% (2 cases) and 50% (1 case) of the glomeruli. Immunofluorescence studies revealed diffuse IgA and C3 mesangial deposits compatible with IgA mesangial nephropathy. Serum IgA levels were 1.3, 6.3 and 6.7 g/l (normal range: 0.9–4.5 g/l). One patient died from respiratory failure 11 months later. One patient with 20% crescents still has a normal renal function and a stable proteinuria after 16 months. The other one experienced a cutaneous vasculitis with arteriolar IgA deposits and decline of renal function (50% fresh crescents) 1 year after the diagnosis. After plasma exchange and corti-costeroid treatment, renal function improved, then gradually decreased and has been stable for 17 months (serum creatinine level: 510 $\mu\text{mol/l}$). The antigens of the major histocompatibility complex were A30, Ax, B13, B35, DR5, DR7 in case 1 and A2, A9, B5, B12, DR3, DR10 in case 2 (table I, II).

Such histological findings, including crescents, have already been described as silicon nephropathy, but without diffuse IgA mesangial deposits [2]. So, we could postulate that these patients have simultaneously silicon nephropathy and Berger's disease. Alternatively 'primitive' IgA nephropathy can also result in such histological features. However, two kinds of arguments could support the hypothesis of a causal relationship between silicosis and IgA nephropathy. At

first, diffuse IgA mesangial deposition seems frequent in patients with various pulmonary diseases, suggesting that an inflammatory process of the lungs may lead to IgA-mediated immune

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Table I. Main data at presentation

ABP = Arterial blood pressure; SCL = serum creatinine level; S IgA 1 = serum IgA level (normal 0.9–4.5 g/l); MHC = major histocompatibility complex.

230

Bonnin/Mousson/Justrabo/Tanter/Chalopin/Rifle

Table II. Evolution of renal function

Patient	Treatment	Outcome
follow-up	SCL	
months	μmol/l	
none	29	105
PE	76	510
none	11	death

(respiratory failure)

SCL = Serum creatinine level; PE = plasma exchange.

1 Serum creatinine level at the time of death: 195 μmol/l.

abnormalities, then to IgA mesangial deposition [1]. Furthermore, silica plays an experimental role of adjuvant (in 2) and can induce immune system dysfunctions such as decrease in OKT 8 + cells [3], depression of phagocytic capacities of the reticuloendothelial system [4], and increase in polyclonal antibody synthesis especially of IgA class [5], all processes which can play a role in the genesis of IgA mesangial nephropathy.

Further investigations are needed to confirm such a hypothesis, but we think that our data should prompt clinicians to report similar cases, if any.

References

Endo, Y.; Hara, M.; Glomerular IgA deposition in pulmonary diseases. *Kidney int.* 29:557–562 (1986).

Bolton, W.K.; Surrat, P.M.; Sturgill, B.: Rapidly progressive silicon nephropathy. *Am. J. Med.* 77:823–828 (1981).

Youinou, P., Ferec, C.; Cledes, J.; Zabbe, C.; Philippon, P.; Dewitte, J.D.; Guillerme, D.; Clavier, J.: Immunological effects of silica dust analyzed by monoclonal antibodies. *J. clin. Lab. Immunol.* 76:207–210 (1985).

Levy, M.H.; Wheelock, E.F.: Effects of intravenous silica on immune and non immune functions of the murine host. *J. Immunol.* 775:41–48(1975).

Doll, N.J.; Stankus, R.P.; Hughes, J.; Weill, H.; Gupta, R.C.; Rodriguez, M.; Jones, R.N.; Alspaugh, M.A.; Salvaggio, J.E.: Immune complexes and antibodies in silicosis. *J. Allergy clin. Immunol.* 65:281–285 (1981).