Bladder Malacoplakia in a Patient on Chronic Hemodialysis Waiting for Kidney Transplantation

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in outline. A striking finding was the variability of the matrix of the phagolysosomes which contained: (1) microvesicles; (2) dark structures of a round or ovoid outline, some of them appearing indistinct or disintegrating; (3) myelin figures; (4) whorls and loops of trilaminated structures in a so-called 'fingerprint' pattern and (5) microcrystals. The latter were particularly seen in larger structures with matrix constituents identical to the

Dear Sir,

There are some case reports of malacoplakia following renal transplantation [1-6] but none diagnosed before transplantation. We had the opportunity to see a case of malacoplakia of the bladder in a 27-year-old female on chronic hemodialysis due to end-stage renal disease. The patient started a work-up for kidney transplantation. A cystourethrogram showed vesicoureteral reflux, and during cystoscopy, some yellow patches which were biopsied were seen mostly in the trigone.

The biopsy specimen was processed for light and electron microscopy. For light microscopy, the tissue was placed in 10% buffered formalin and embedded in paraffin. Sections, 5- μ m thick, were cut and stained with HE, periodic acid-Schiff (PAS), von Kossa's and Perl's stains. For electron microscopy, the tissue was fixed in Karnovsky and embedded in Araldite. Thick sections for survey were stained with toluidine blue, and thin sections were cut and placed on grids for electron-microscopic evaluation. The ultra-thin sections were examined in a Carl Zeiss EM-10 electron microscope.

On light microscopy, the surface epithelium was unremarkable. No ulcerations were seen. In the lamina propria of the mucosa, a dense and diffuse infiltrate of macrophages with rare scattered lymphocytes, plasmocytes and other inflammatory cells were seen. Large granules entirely filling the cytoplasm of the macrophages were strongly positive with the PAS reaction. Small spherules consistent with Michaelis-Gutmann bodies were frequently seen intra- and extracellularly. These bodies were positive for iron (Perl's stain) and calcium (von Kossa's stain).

Ultrastructural examination revealed macrophages containing numerous intracytoplasmic phagolysosomes generally circular

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Fig. 1. Ultramicrograph of a typical Michaelis-Gutmann body disclosing central cavitation. $\times 8,500$.

phagolysosomes. In some of the larger structures with crystal deposition, there was central cavitation constituting the typical Michaelis-Gutmann body which was seen intra- and extracellularly (fig. 1). In the larger structures, a continuum of calcification could be appreciated from scattered deposited crystals to the classical Michaelis-Gutmann body with central cavitation. Bacteria or bacteria-like structures were not visualized.

The finding of malacoplakia surprised the nephrologists and urologists that were taking care of the patient. Considering that the few case reports available of malacoplakia following renal transplantation indicate that the disease may pursue a fatal course in 66% of afflicted recipients [6], they decided to con-tra-indicate the transplant.

The pathogenesis of malacoplakia is unknown. It is hypothesized that it is an altered immunological response to organisms like *Escherichia coli*. In our patient, urine cultures were negative and no organisms were found on electron microscopy. Speculatively, we can attribute the pathogenesis of the lesion in this case to the altered immunity that occurs in chronic dialysis patients [7-10].

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