

KIDNEY LESIONS IN AMPHOTERICIN B THERAPY. AN ELECTRON MICROSCOPIC STUDY

(PRELIMINARY REPORT)

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SUMMARY

Five kidney biopsies performed during Amphotericin B therapy were studied by electron microscopy. None of the cases showed glomeruli alterations. Proximal convoluted tubuli showed brush border disappearance and cellular disjunction. In the tubuli, in general, cytoplasm rarefaction with endoplasmic reticulum diminution was seen. Mitochondria showed disappearance of cristae. Marked increase in number of cytoplasmic dense bodies were also seen in the tubular epithelium. Intracellular calcium appeared like granular small dense bodies. No nuclear alterations were seen. Small arteries showed diffuse vacuolisation of muscle cells not corresponding do fat.

Five kidney biopsies performed during Amphotericin B therapy were studied by electron microscopy. Four patients received the drug for treatment of South American blastomycosis and the last one was a case of maduromycosis. All the patients of South American blastomycosis had a tegumentary and ganglionar form of the disease; the other one had a maduromycotic mycetoma of the right foot.

Four of the patients studied were males and one a female, ages ranging from 22 to 38 years, an average of 28 years. Dosage of Amphotericin B until the biopsy time varied from 26.7 and 34.8 mg/kg of weight (average 30.8 mg/kg). In the patient of maduromycotic mycetoma the duration of the illness was of four years. At the time

of the renal biopsy he had received 34.8 mg/kg of weight (2.050 mg) of Amphotericin B.

None of the cases showed glomeruli alterations in spite of the fact that light microscopy had shown in a larger series of cases morphological data suggestive of endothelial tumefaction and thickening of the basal membrane. The main alterations were seen in the tubuli. Proximal convoluted tubuli showed brush border disappearance and cellular disjunction (Fig. 1 and 4). Moreover, in the tubuli in general cytoplasm rarefaction with endoplasmic reticulum diminution was seen (Fig. 3). Mitochondria showed disappearance of cristae (Fig. 2). Marked increase in number of cytoplasmic dense bodies some of them appearing like

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Fig. 1 — Two proximal tubular cells showing brush border depletion (BE), increased number of dense bodies (CD), Mitochondria (M) and Golgi apparatus (G) without alterations. 10,500 X.

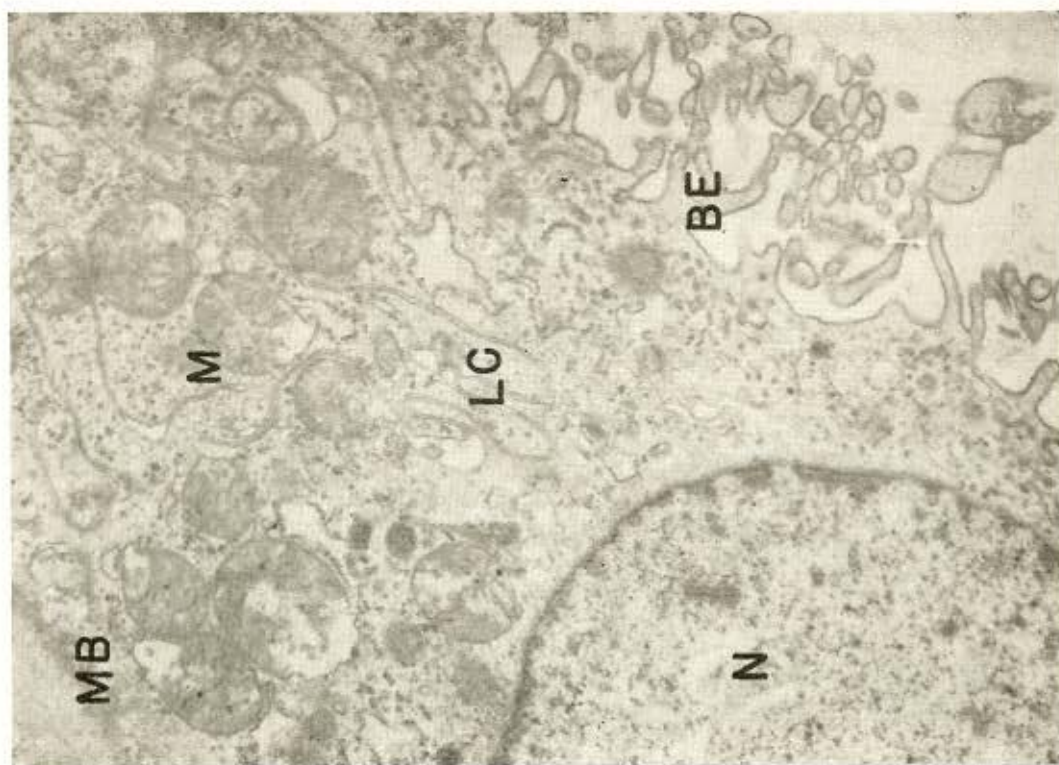


Fig. 2 — Proximal tubular cell showing partial vacuolization of mitochondria (M) and brush border denudation (BE). (500 X).

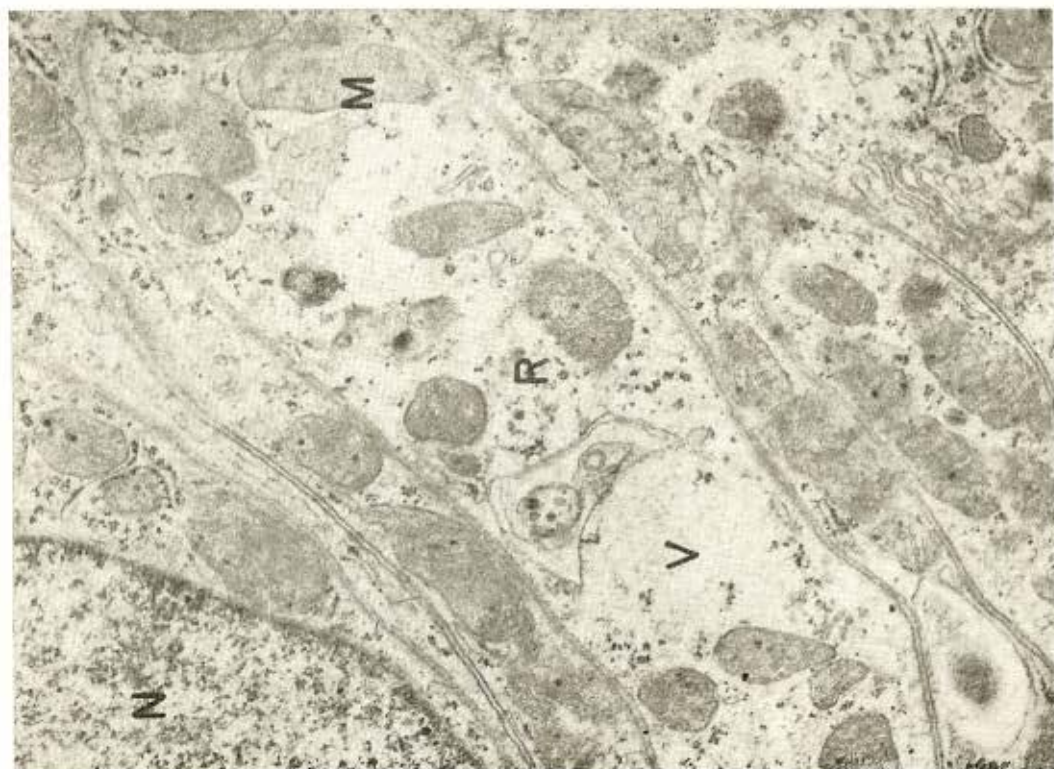


Fig. 3 — Distal tubular cell with partial cytoplasmic vacuolization (V). (500 X).

modified mitochondria were also seen in the tubular epithelium (Fig. 1). Intracellular calcium appeared like granular small dense bodies deposit located in oval or round structures, probably altered mitochondrial matrix (Fig. 5). No nuclear changes were seen. Small arteries showed diffuse vacuolization of muscle cells that does not correspond to fat. Elastic fragmentation and grumous electron dense material deposited were also seen in some cases (Fig. 6).

RESUMO

Lesões renais no decurso da terapêutica pela Anfotericina B. Estudo baseado em microscopia eletrônica

Foram estudadas à microscopia eletrônica cinco biopsias renais, quatro de pacientes portadores de blastomicose sul-americana e um de maduromicose, sob tratamento por Anfotericina B. A dose da droga, recebida pelos pacientes até a ocasião das biopsias variou de 26,7 a 34,8 mg/kg de peso.

Em nenhum dos casos foram vistas alterações glomerulares, não obstante terem sido elas encontradas numa série maior de casos estudados à microscopia óptica. As alterações mais importantes foram verificadas nos túbulos. Os proximais mostraram desaparecimento da borda em escóva e disjunção celular; nas células tubulares, verificou-se rarefação do citoplasma e diminuição do retículo endoplasmático. Os mitocôndrios mostraram desaparecimento de cristas; houve nítido aumento dos corpos densos citoplasmáticos, alguns deles assemelhando-se a mitocôndrios modificados, vistos também no epitélio tubular. Depósitos intracelulares de cálcio apareceram como corpos densos granulados. Não foram vistas alterações nucleares. As pequenas artérias mostraram vacuolização difusa das células musculares, não correspondentes a gordura. Fragmentação da elástica e depósito de material electron-denso foi também visto em alguns casos.

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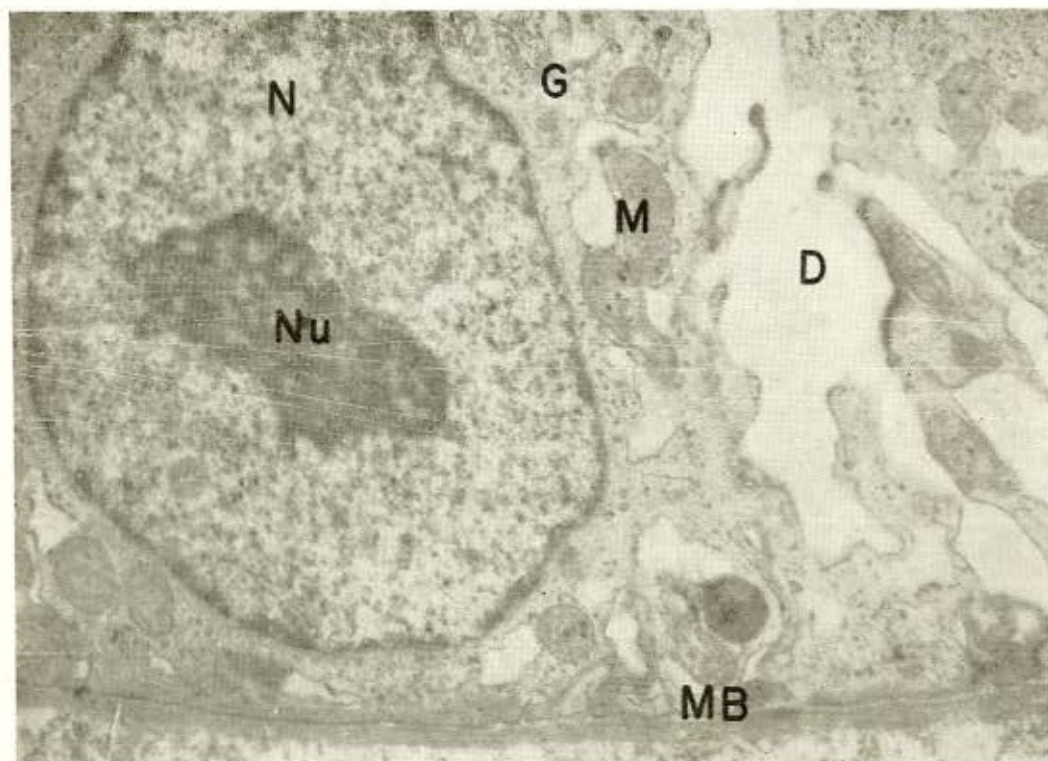


Fig. 4 — Marked disjunction between proximal tubular cells (D). Basal membrane (B), mitochondria (M) and Golgi apparatus (G) showing no alterations. 10,500 X.

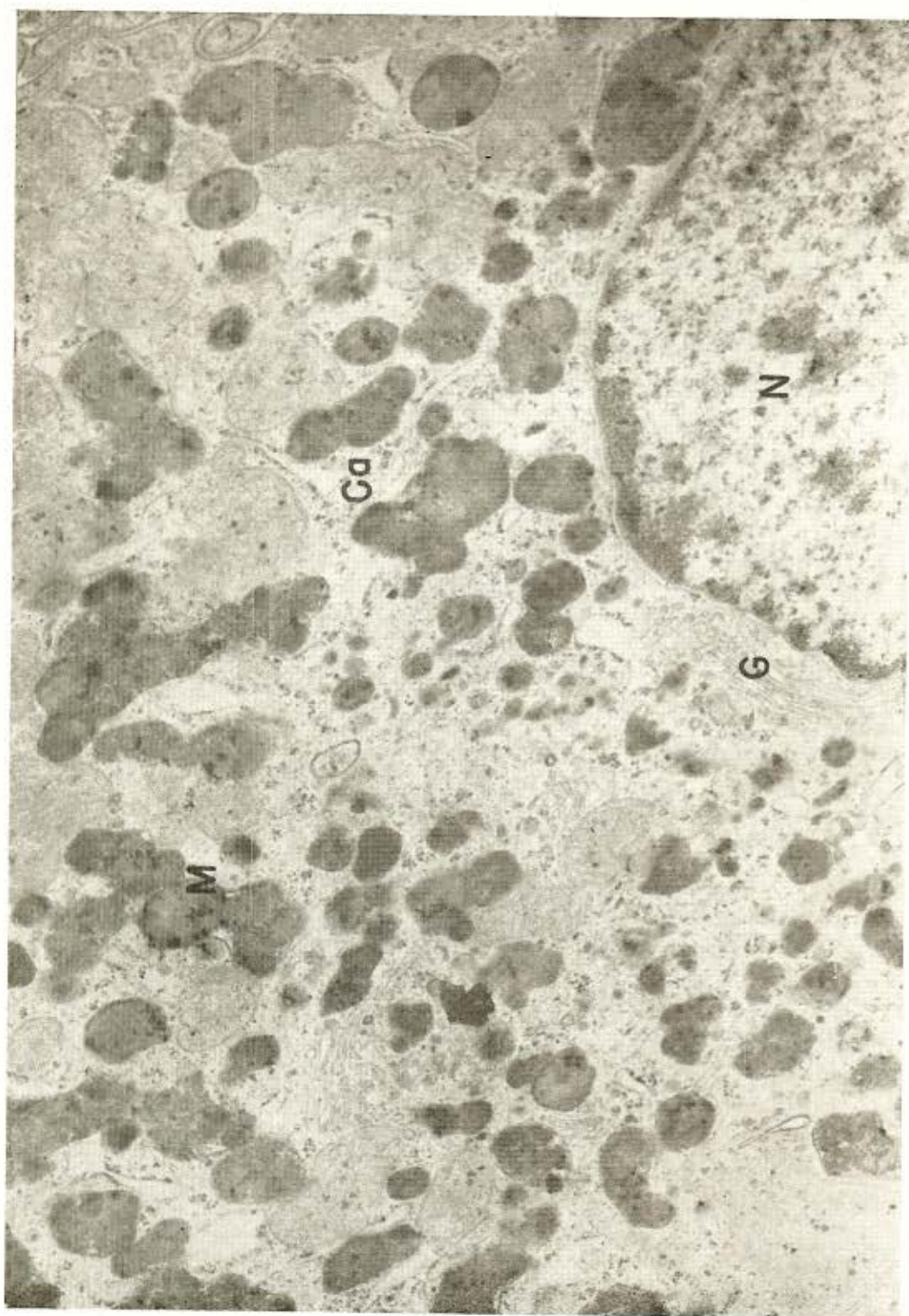


Fig. 5 — Tubular cell showing cytoplasmic granular deposits of calcium (Ca), some of them with a contour similar to altered mitochondria. 21,000 X.



Fig. 6 — Small artery showing muscle cells vacuolization (V) and osmiophilic granular material at the elastic membrane (E). Mitochondria (M) also showing vacuolization. 10,500 X.