Immunohistochemical Demonstration of Vimentin and S-100 Protein in the Kidneys

M. MARETTA AND E. MARETTOVÁ

Department of Anatomy and Histology, University of Veterinary Medicine, Košice, Slovak Republic

Abstract. Vimentin and S-100 protein expression was studied in the kidneys of adult sheep and goat using immunohistochemistry Vimentin was detected in the podocytes, mesangial cells of the glomerulus, in the endothelium of renal capillaries and renal stromal cells In collecting tubules, ducts and nerves of the renal papilla, S-100 protein was expressed

Key words: S-100 protein - Vimentin - Kidney - Sheep - Goat

Introduction

An increased attention has been focused on the immunohistochemical distribution of S-100 protein and vimentin in glial-like cells inside and outside the CNS as in the non-neuroectodermal cells The distribution of diverse types of intermediate filament proteins in the rat, bovine and human kidney has been studied (Bachmann *et al* 1983, Molin *et al* 1985, Oosterwijk *et al* 1990) The expression of intermediate filament proteins, particularly vimentin and calcium binding S-100 protein was immunohistochemically investigated using paraffin–embedded tissue from kidneys of adult sheep and goat

Materials and Methods

Samples of kidneys were fixed in 4 % buffered formalin for 24 hours After the embedding in paraffin 5 μm sections were cut After rehydratation the sections incubated with polyclonal S-100 protein antisera were processed according to the peroxidase-antiperoxidase (PAP) technique Goat anti-rabbit IgG (diluted 1 50) as a second antibody and PAP-complex (diluted 1 200) for the third step (both from Dakopatts, Denmark) were used In other sections, vimentin was detected by incubation with vimentin monoclonal antibodies in combination with the avidin-biotin-peroxidase complex (ABC) method (Hsu *et al* 1981) In this case, the biotinylated anti-mouse IgG (1 250) was applied as a second step, followed by ABC–complex (1 250) (both from Vector, Burlingham, USA) Thereafter, the peroxidase activity was developed by means of 3,3′-diaminobenzidine hydrochloride (DAB) (20 %) and H_2O_2 (0 002%)

Correspondence address M Maretta, Department of Anatomy and Histology, University of Veterinary Medicine, Komenského 73, 041 81 Košice, Slovak Republic
e-mail histologia@uvm.sk

Figure 1.

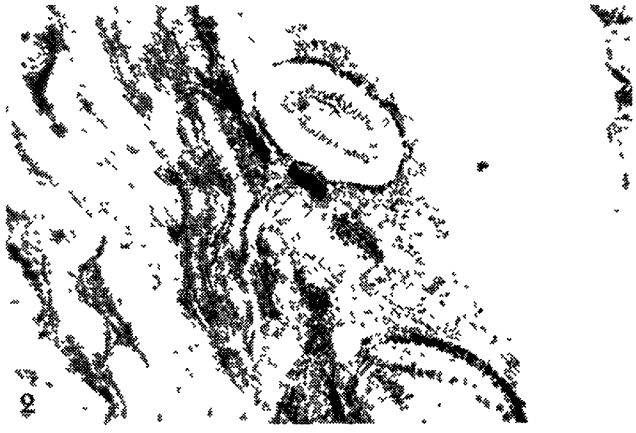

Figure 2.

Results and Discussion

Expression of vimentin was found in the renal glomerula, namely in podocytes, mesangial and visceral glomerular cells, in endothelial cells of renal capillaries and larger blood vessels as well as in renal stromal cells (Fig 1, 2) S-100 protein positive cells were observed in the collecting tubules and ducts in the inner cortex and medula Positive cells exhibited a granular distribution which was predominant in the apical part of the cytoplasm A weak positive reaction was also observed in the cylindric epithelium of the renal papillae A similar distribution of vimentin and S-100 protein was observed in the rat and human kidney by Molin *et al* (1985), Stamenkovitz *et al* (1986), Oosterwijk (1990) In rat kidney, in contrast to results of Molin *et al* (1985) the interstitium gave the positive reaction, namely around the blood vessels, at the vascular pole of the glomerulus and between the renal tubules (Fig 3) An accumulation of interstitial tissue distributed locally positive for S-100 protein was observed The nerve fibres with Schwann cells in the renal papillae gave strong positive reaction

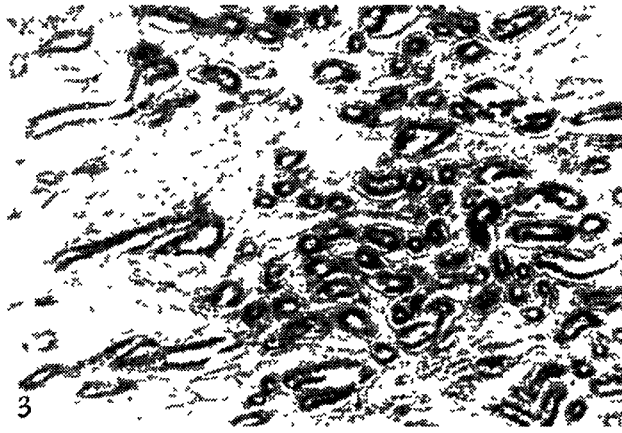

Figure 3.

References

Bachmann S , Kriz W , Kuhn C , Franke W W (1983) Differentiation of cell types in the mammalian kidney by immunofluorescence microscopy using antibodies to intermediate filament proteins and desmoplakins Histochemistry **77**, 365—394

Hsu S M , Raine L , Fanger H (1981) Use of avidin-biotin-peroxidase complex (ABC) in immunoperoxidase techniques a comparison between ABC and unlabeled intibody (PAP) procedures J Histochem Cytochem **29**, 577—580

Molin S O , Rosengren J , Baudier J , Hamberger A , Haglid K (1985) S-100 alpha-like immunoreactivity in tubules of rat kidney J Histochem Cytochem **33**, 367—374

Oosterwijk E , Van Muijen Goos N P , Oosterwijk-Wakka Jeanette C , Warnaar Sven O (1990) Expression of intermediate-sized filaments in developping and adult human kidney and in renal cell carcinoma J Histochem Cytochem **38**, 385—392

Stamenkovitz I , Skalli O , Gabbiani G (1986) Distribution of intermediate filament proteins in normal and diseased human glomeruli Amer J Pathol **125**, 465

Expression of Cytokeratins in the Urinary Passages

E Marettová and M. Maretta

Department of Anatomy and Histology, University of Veterinary Medicine, Košice, Slovak Republic

Abstract. The distribution of Pan cytokeratin and cytokeratin 18 in the dog and sheep urinary bladder and ureter as seen by immunohistochemistry using monoclonal antibodies

Correspondence address E Marettová, Department of Anatomy and Histology, University of Veterinary Medicine, Komenského 73, 041 81 Košice, Slovak Republic
e-mail histologia@uvm.sk