

CADHERIN 9 EXPRESSION IN THE INTERSTITIUM OF FETAL, NORMAL ADULT AND GLOMERULONEPHRITIC KIDNEYS



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Background

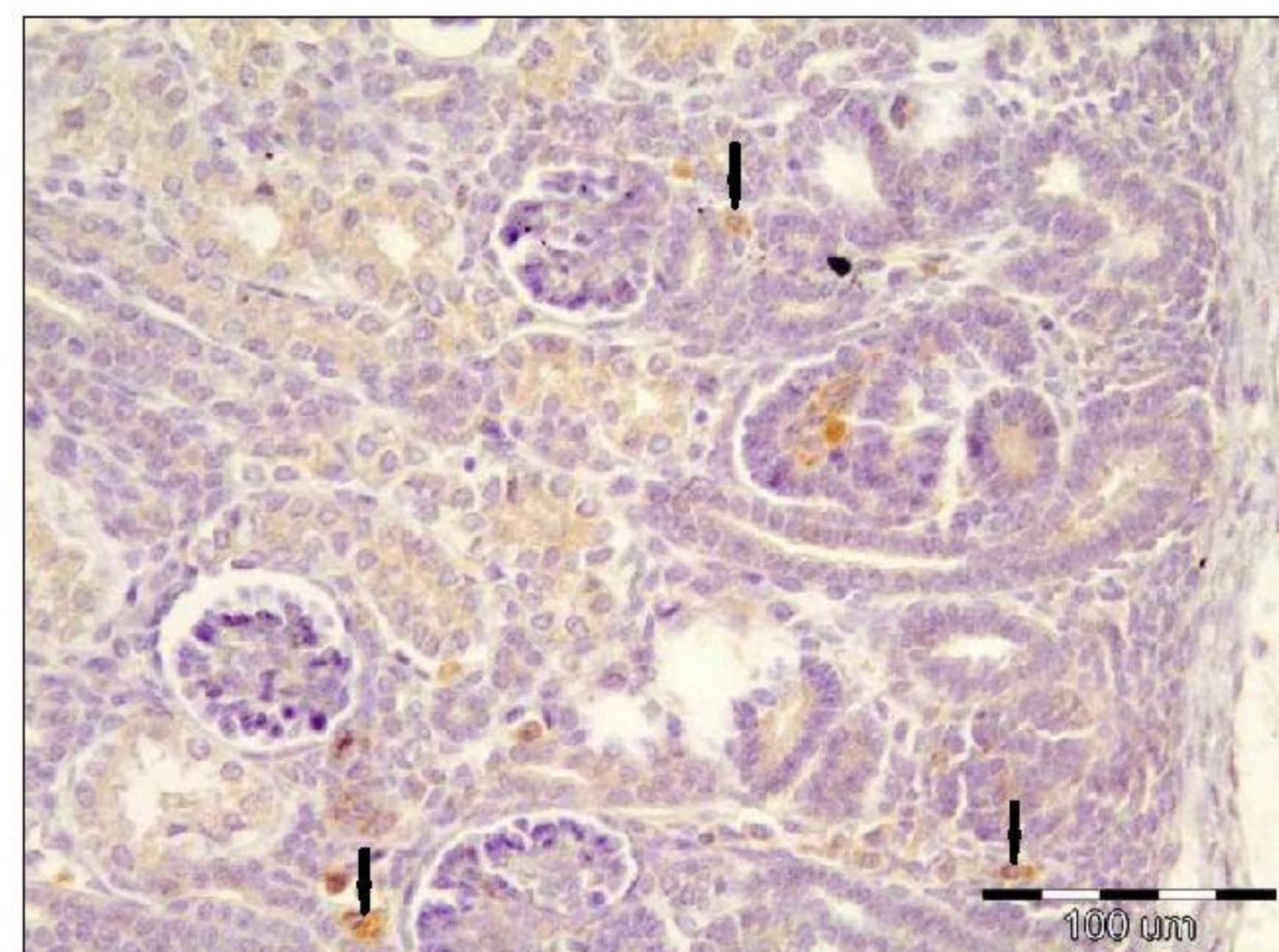
The fibroblasts, as constitutive elements of the renal interstitial space, are known to have the central role during the process of interstitial fibrosis. In the search for fibroblast marker, Cadherin 9 has recently been proposed to be specific for a subpopulation of renal interstitial fibroblasts originating from fibrotic interstitium.

Methods

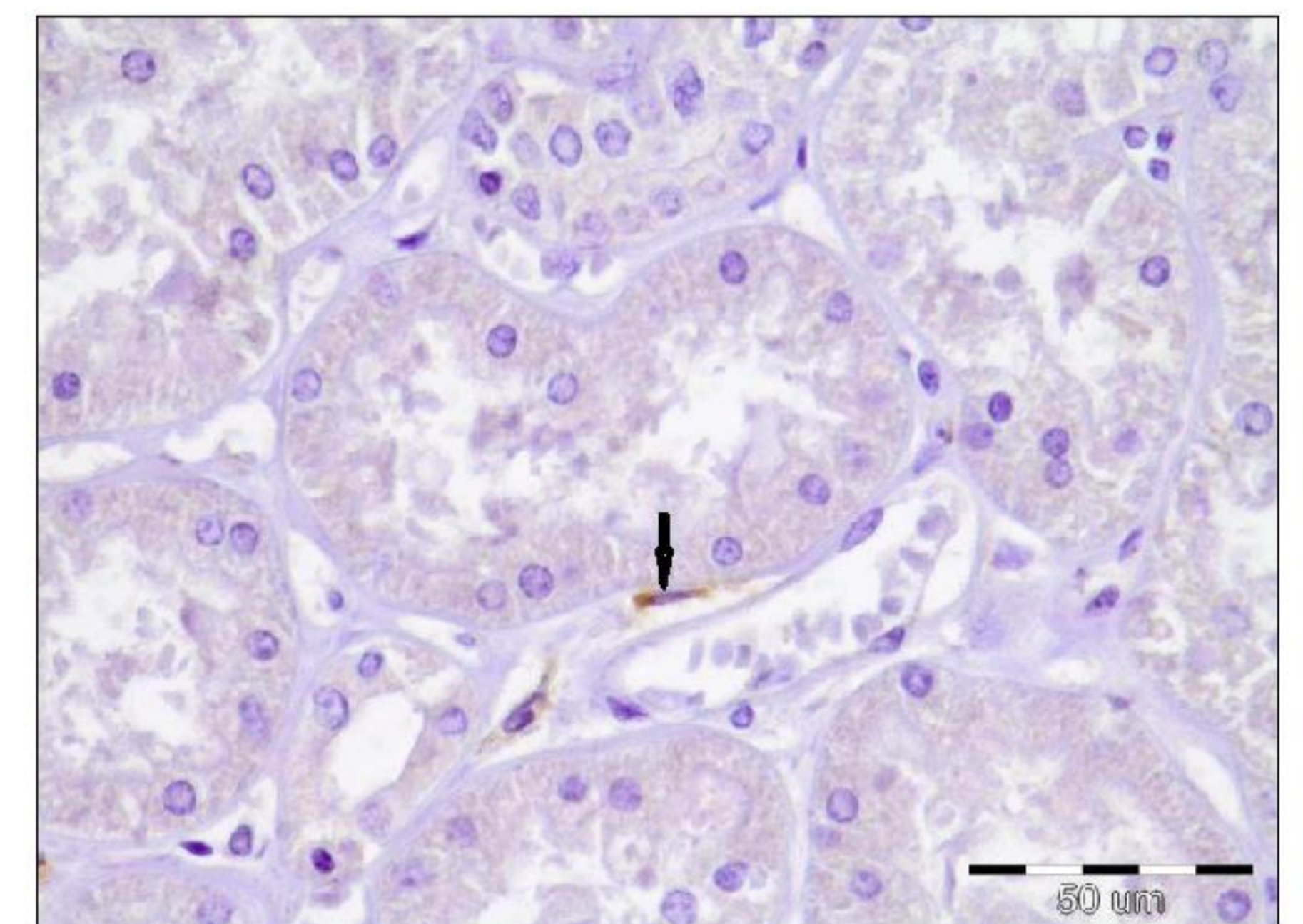
We performed immunohistochemical stainings with commercial antibody against Cadherin 9 on formalin fixed, paraffin embedded tissue samples of 20 fetal, 40 normal adult and 40 kidneys previously diagnosed with glomerulonephritis and with interstitial fibrosis of at least 10%. Additionally, Western blot and RT-PCR for Cadherin 9 were done on selected samples from glomerulonephritic and fetal kidneys, as well as on cell lines of fibroblasts originating from normal and fibrotic interstitium.

Results

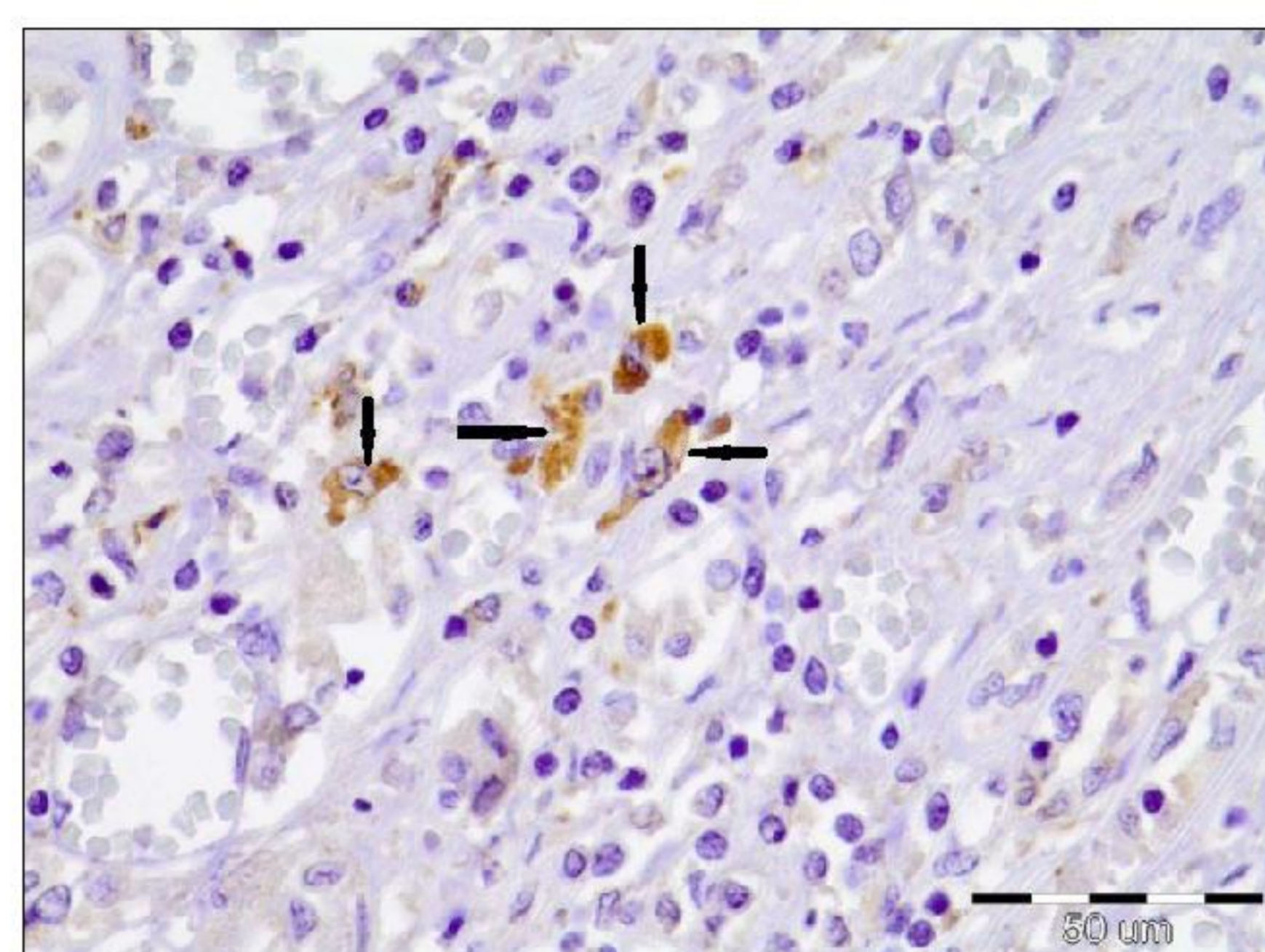
The morphological analyses showed that a subset of renal interstitial fibroblasts in fibrotic interstitium, besides positivity for common mesenchymal and less specific fibroblast markers, showed positive cytoplasmic signal for Cadherin 9 (arrows). The presence of this protein in the fetal and fibrotic tissue was also verified by Western blotting of protein extracts from kidney lysates, as well as with RT PCR of the RNA isolates from fibrotic tissue and fibrotic kidney fibroblast cell line. Another interesting observation was the moderate presence of Cadherin 9 positive interstitial cells in the fetal kidney specimens, markedly lower to absent signal in the interstitial cells of normal adult kidneys and increased number of cells in the fibrotic interstitium of glomerulonephritic kidneys (in comparison to the normal adult kidneys). The number of positive cells in the fibrotic interstitium correlated with the extent of interstitial fibrosis ($R=0,43$; $p<0,01$).



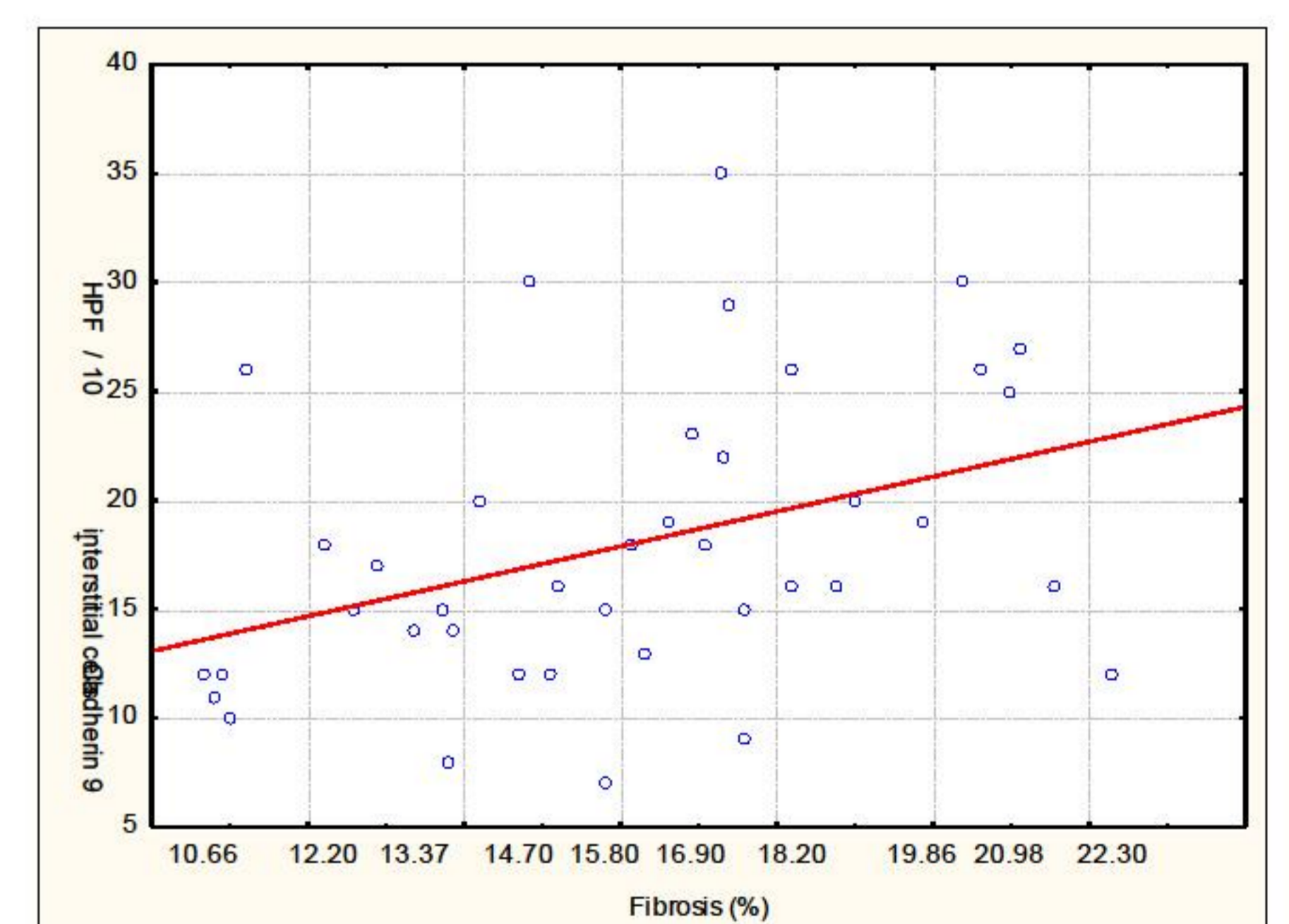
Fetal kidney, x200



Normal adult kidney, x200
(2-3 cells / 10 HPF)



Glomerulonephritic kidney, x400
(17,95 cells / 10 HPF)



Positive correlation between Cadherin 9 positive cells and interstitial fibrosis ($R=0,43$; $p<0,01$)

Conclusions

These observations support the theory that Cadherin 9 could be a specific marker for a certain subpopulation of renal fibroblasts that take part in the process of fibrosis.

References

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2. Kaissling B, Le Hir M. The renal cortical interstitium: morphological and functional aspects. *Histochem Cell Biol*. 2008; 130:247–62.

