Table E-1. Assessment of Degeneration of the Human Intervertebral Disc with Magnetic Resonance Imaging*

Disc Grade	Nucleus Pulposus	Anulus Fibrosus	End Plate	Vertebral Body
I	Homogenous; bright; demarcation distinct	Homogenous; dark gray	Single dark line	Margins rounded
II	Horizontal dark bands extend across the anulus fibrosus centrally	Areas of increased signal intensity	Increase in central concavity	Tapering of margins
III	Signal intensity diminished; gray tone with dark and bright stippling	Indistinguishable from nucleus pulposus	Line less distinct	Small dark projections from margins
IV	Proportion of gray signal reduced; bright and dark regions larger	Indistinguishable from nucleus pulposus; some bright and dark signals contiguous with nucleus pulposus and anulus fibrosus	Focal defects in line	Projections < 2 mm with same intensity as marrow
V	Gross loss of disc height; bright and dark signals dominant	Signals contiguous with nucleus pulposus	Defects and areas of thickening	Projections > 2 mm with same intensity as marrow

*The system is based on data from reference 18 and involves the use of T2-weighted spin-echo images (repetition time, 3000 ms; echo time, 80 ms).

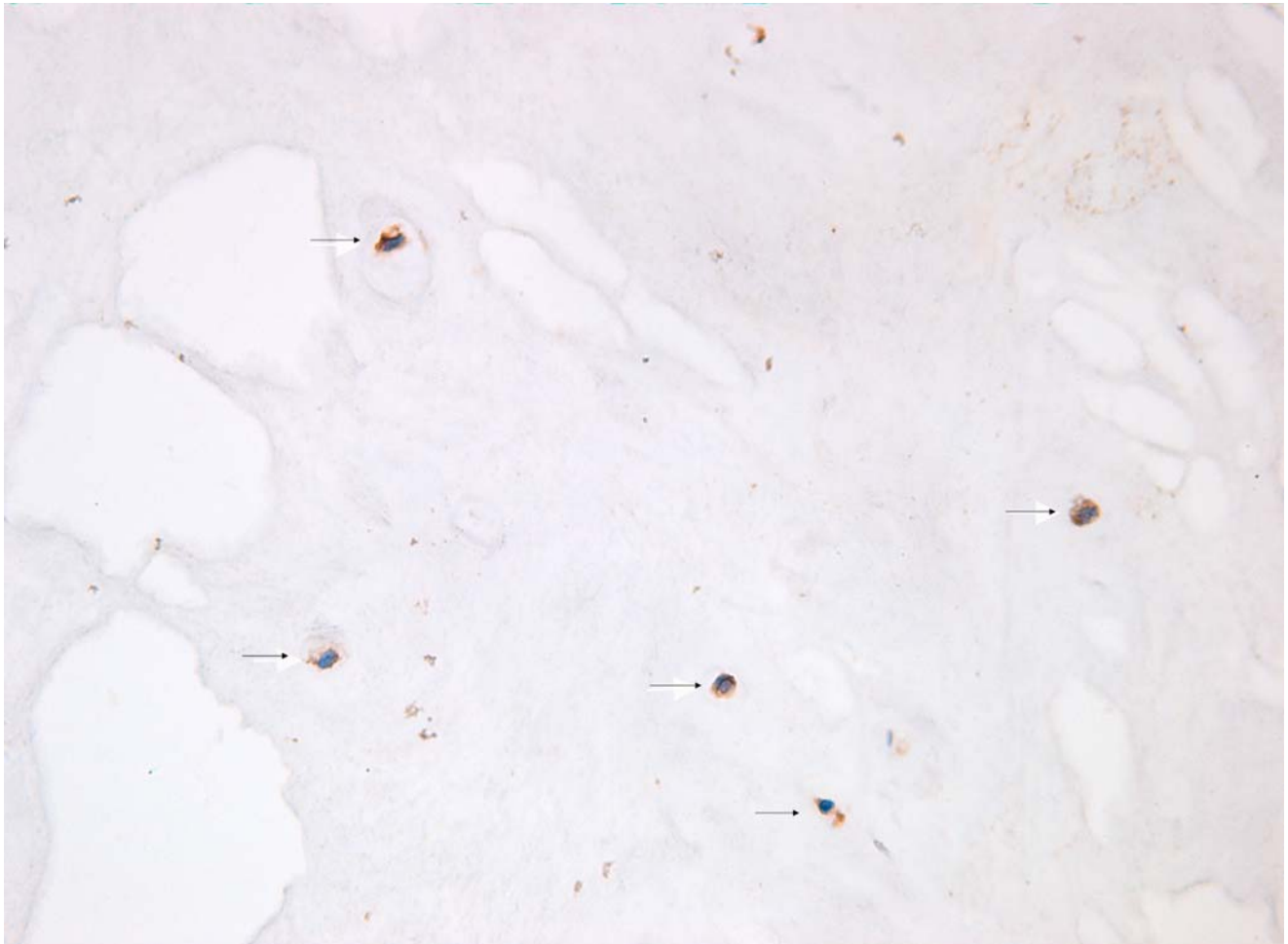

Fig. E-1A

Immunohistochemical study showing expressions of BID on disc cells of herniated lumbar disc tissue (arrows).

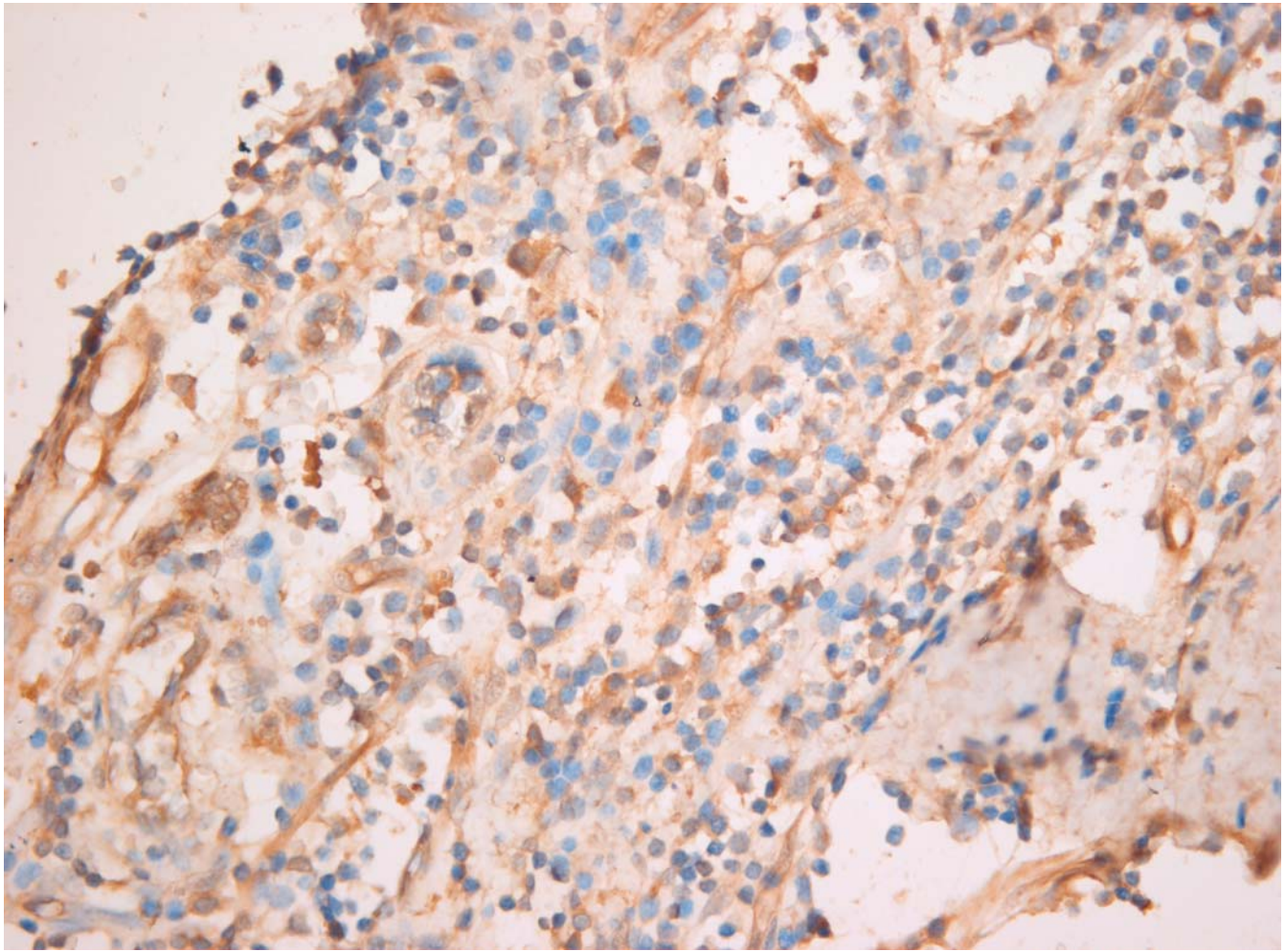

Fig. E-1B

Human breast carcinoma tissue was used as control (×400).

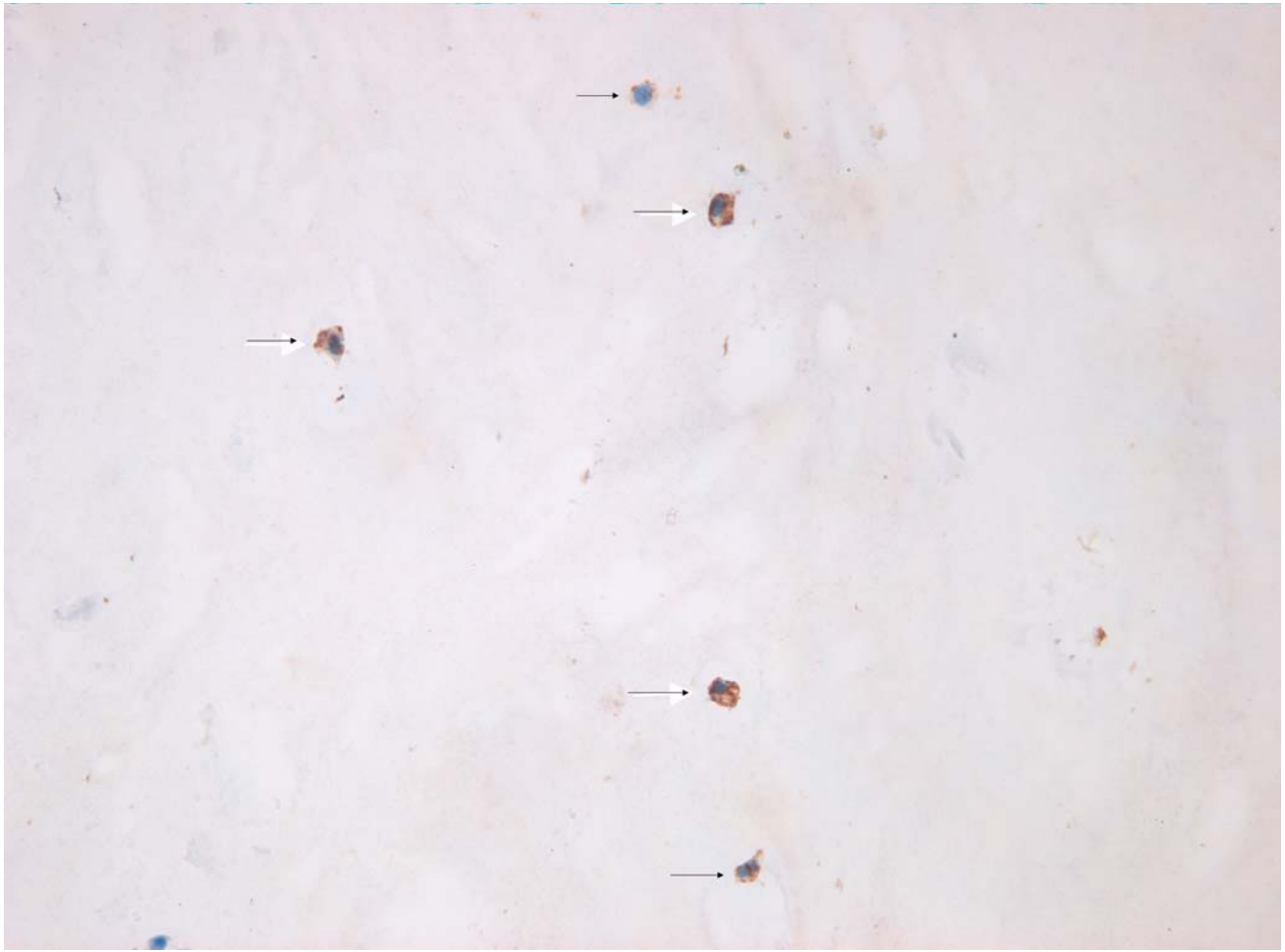

Fig. E-2A

Immunohistochemical study showing expressions of cytochrome-c on disc cells of herniated lumbar disc tissue (arrows).

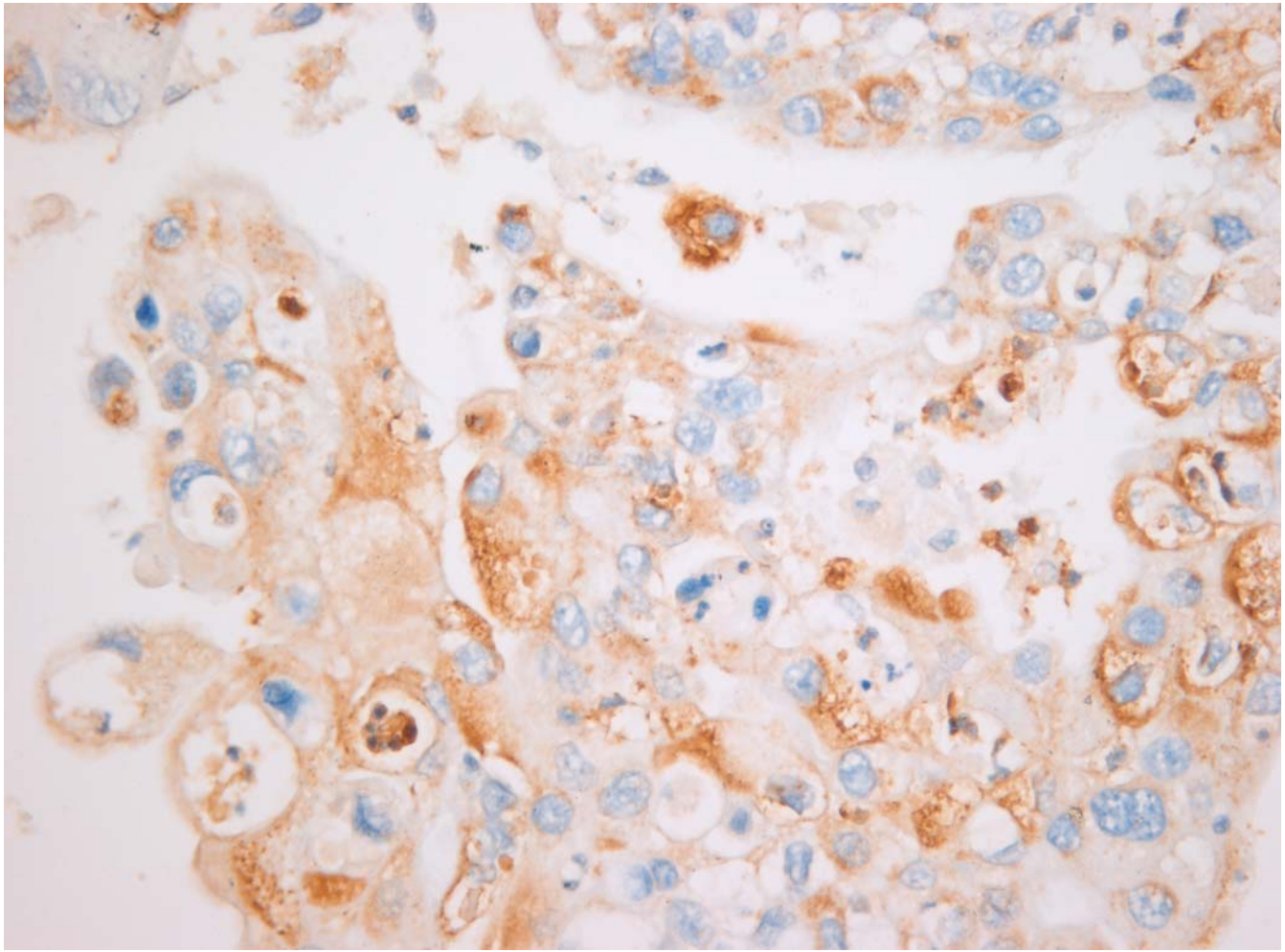

Fig. E-2B

Human breast carcinoma tissue was used as control (×400).

Fig. E-3A

Immunohistochemical study showing expressions of caspase-9 on disc cells of herniated lumbar disc tissue (black arrows) and apoptotic disc cells (red arrows).

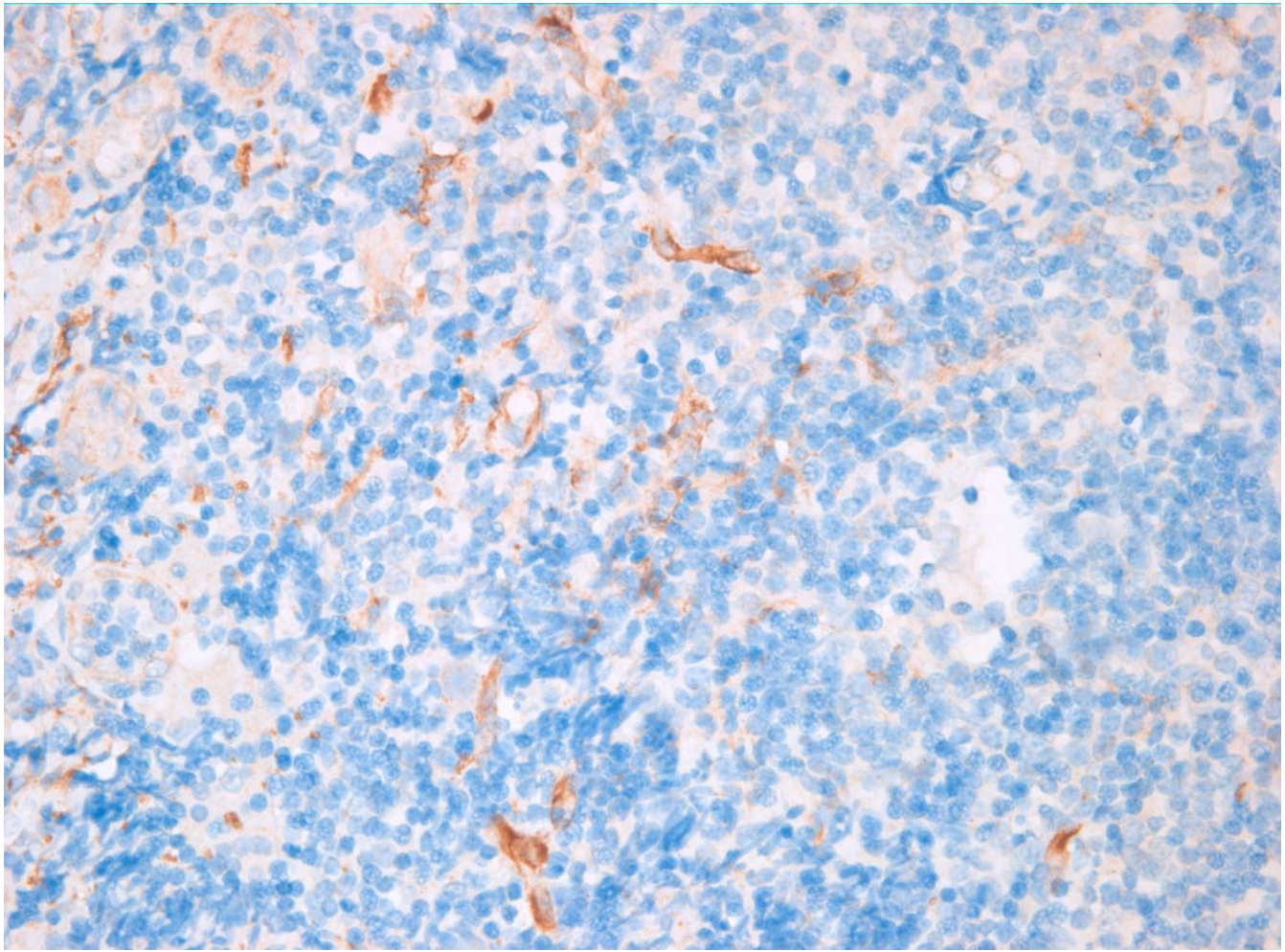

Fig. E-3B

Tonsil tissue was used as control (×400).

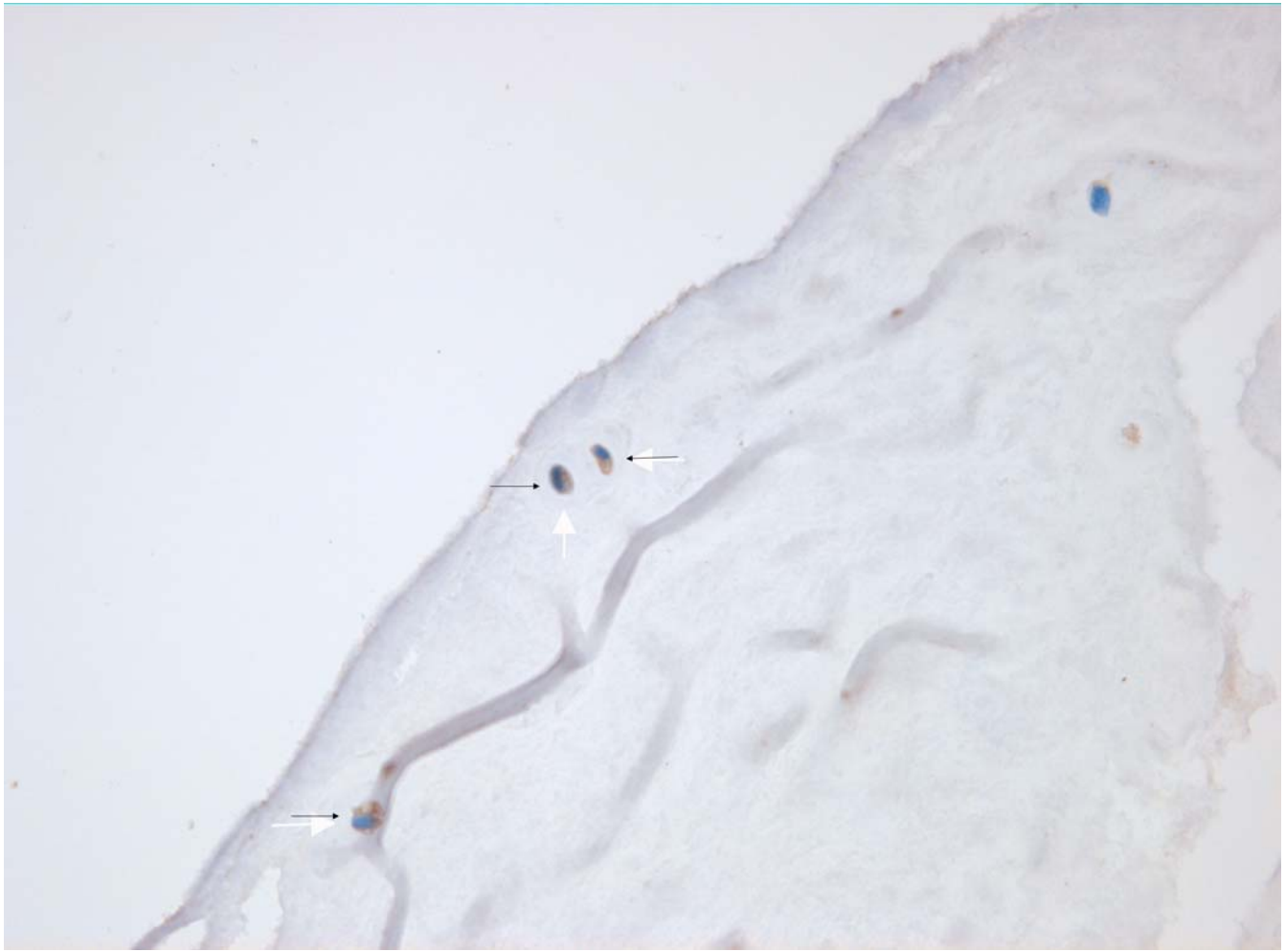

Fig. E-4A

Immunohistochemical study showing expressions of caspase-3 on disc cells of herniated lumbar disc tissue (arrows).

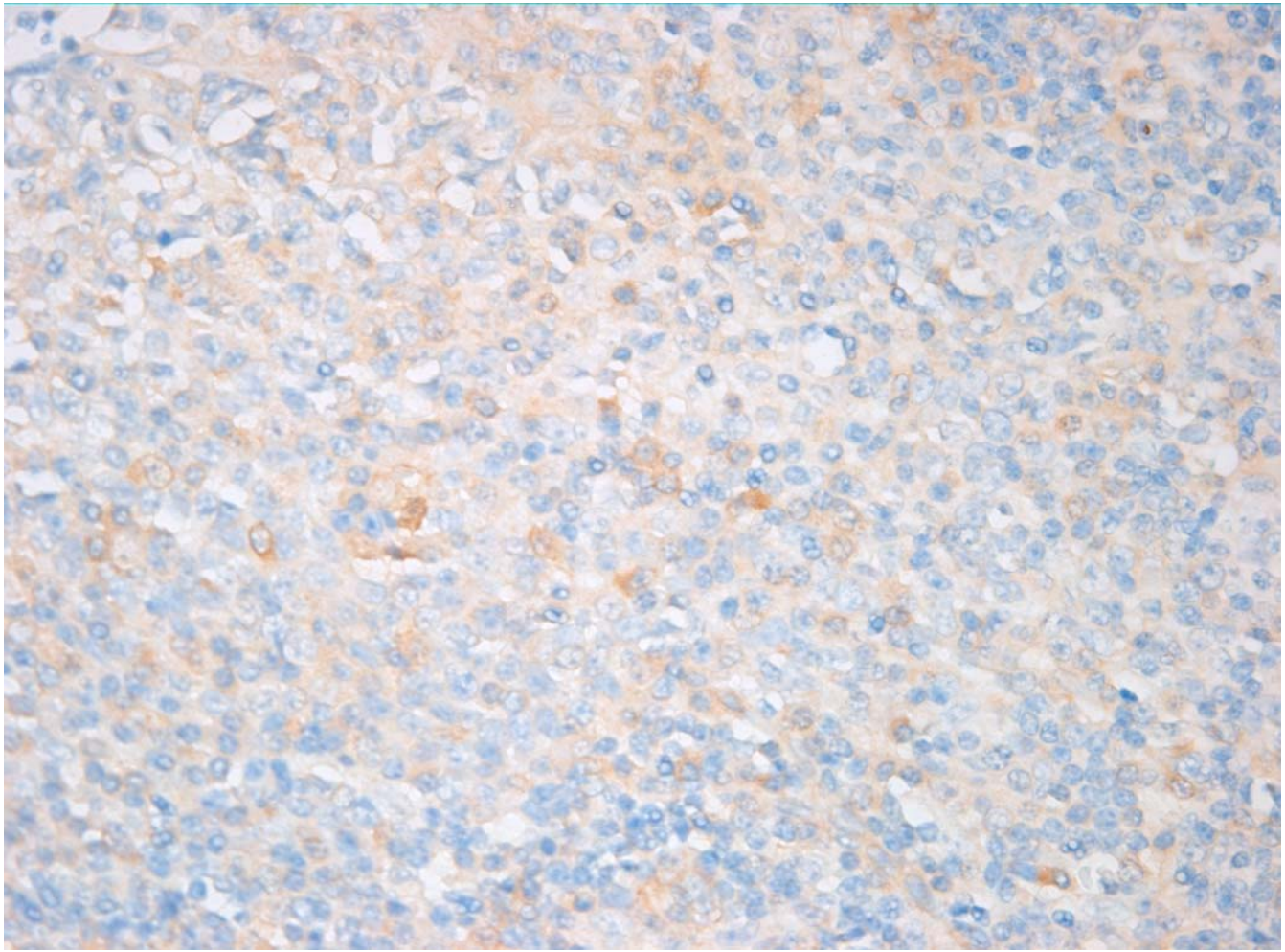

Fig. E-4B

Tonsil tissue was used as control (×400).

Fig. E-5A

Immunohistochemical study showing absence of localization of caspase-8 on disc cells of herniated lumbar disc tissue.

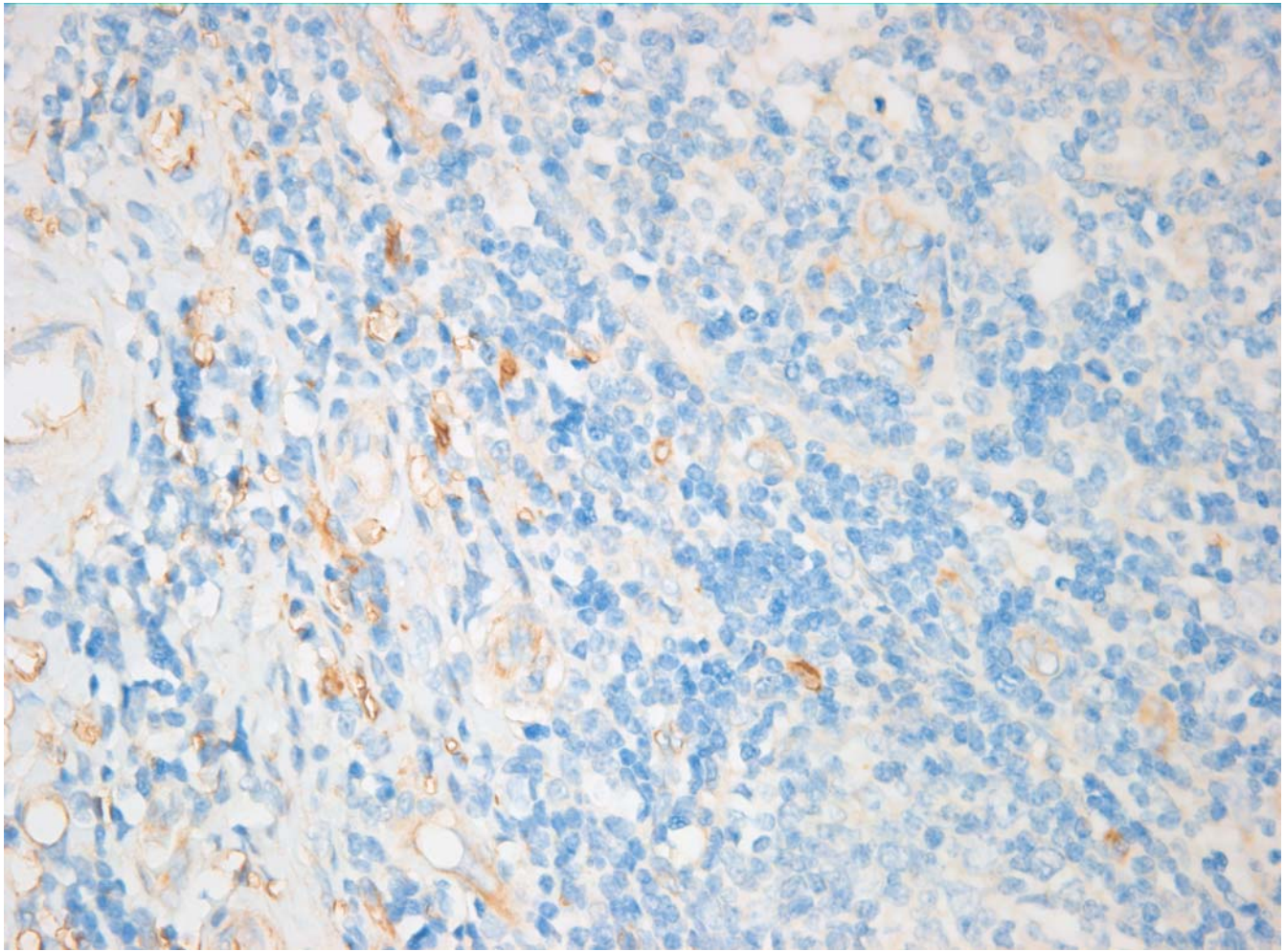

Fig. E-5B

Tonsil tissue was used as control (×400).

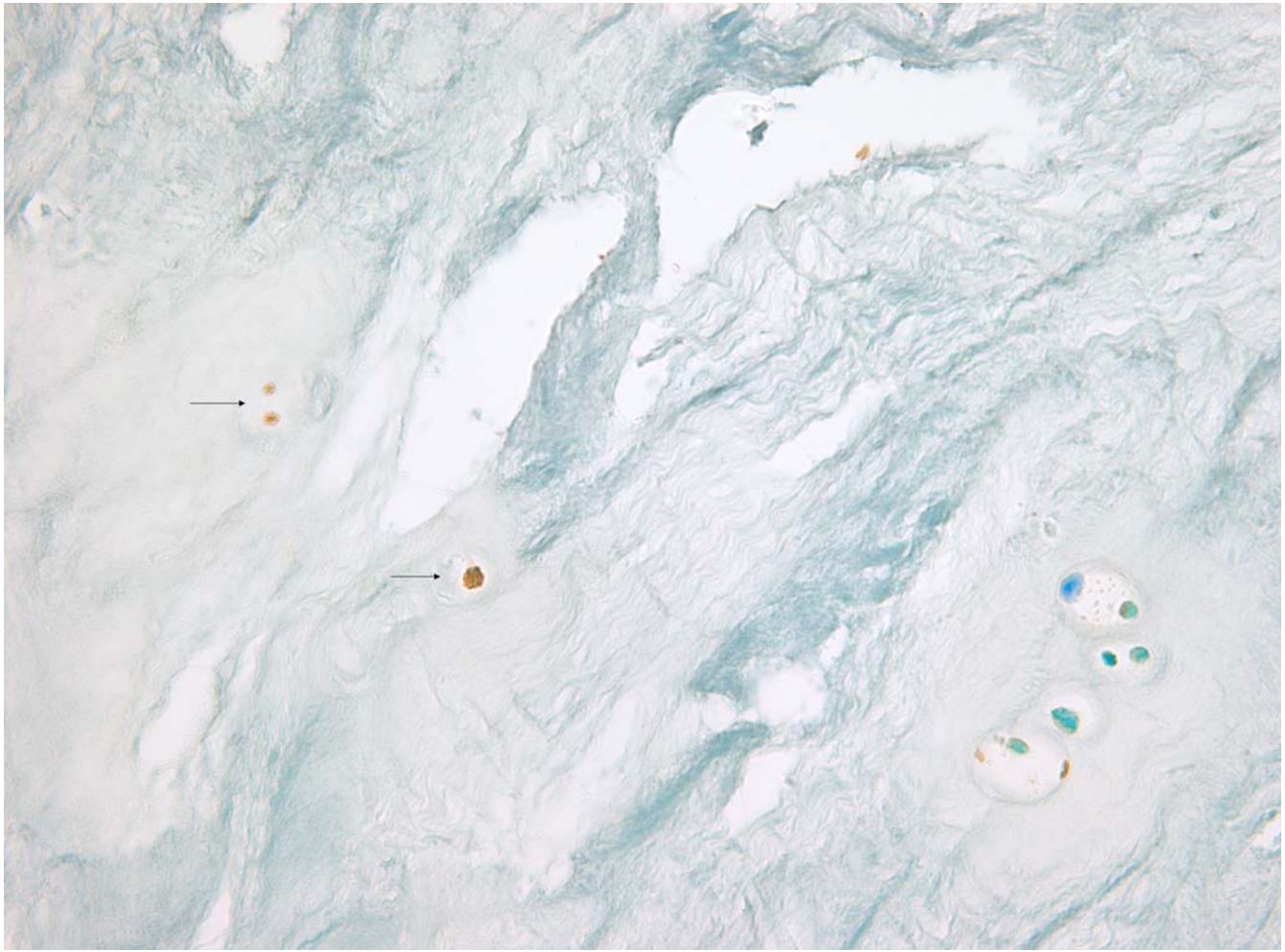

Fig. E-6

TUNEL-positive disc cells (arrows) were identified in herniated lumbar disc tissue (×400).