Membrane blebbing and apoptotic bodies in cerebellar cells

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Detection of 1 mM staurosporine-induced apoptotic cells by annexin V-Cy3.18 (red), a marker for phosphatidylserine (PS) moieties on outer cell surface, and 6-CFDA (green), a marker for viable cells.

Early apoptotic cells:

annexin V-Cy3.18 (+), 6-CFDA(+)

Late apoptotic or necrotic cells:

annexin V-Cy3.18 (+), 6-CFDA(-)

Viable cells:

annexin V-Cy3.18 (-), 6-CFDA(+)

Cerebellar cells, primary culture, rat pups, 5th postnatal day. Confocal microscopy PCM 2000 on Nikon TE 300 inverted microscope.

Blebbing of plasma membrane and formation of apoptotic bodies are critical apoptotic events, indicating imminent cell death. Apparently these events do not parallel the degree of PS exposure on outer cell membrane, since they are fully present (arrowheads) in cells where PS exposure is low (a), medium (b) or high (c). Conversely, not all PS exposing cells are also blebbing (arrows). This suggests the (in)dependency of the two processes should be investigated.

Keywords: kinetics of apoptotic markers • confocal microscopy • phosphatidyl serine exposure

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