

P027 Age-related changes of cytoskeletal composition: a preliminary study of the role of cytoskeleton in intervertebral disc degeneration

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Cytoskeleton is important for communication and transport between the disc cell and extracellular matrix (ECM). Disturbance of cytoskeletal network would cause abnormal communication and transport between cell and ECM, inducing intervertebral disc degeneration. Therefore, we investigated the cytoskeletal elements between young and mature bovine disc, and found that there were no age-related differences in hydroxyproline in disc, but higher sGAG in young NP compared with mature NP. There was higher pro MMP-2 in mature NP compared with young NP. TIMP-1 and TIMP-2 levels were higher in NP compared with OAF. Western blots showed that there was more β -actin, β -tubulin and vimentin in the young OAF compared with the mature, but no age-related difference in NP. No age-related difference in ezrin and vinculin was observed. Furthermore, confocal microscopy revealed no difference in the organization of cytoskeleton proteins in cell between young and mature disc. We conclude that β -actin, β -tubulin and vimentin expression is higher in the young bovine OAF than that of the mature. Loss of the cytoskeletal elements in the ageing IVD may affect mechanical signal transduction. Ongoing studies will therefore endeavour to determine the role of the cytoskeletal elements in IVD mechanotransduction.