Primary cilia as a novel biomarker of acute kidney injury

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The primary cilium is a microtubule-based non-motile hair-like organelle that is known to a mechano- and chemo-sensor. The primary cilium is made up of nine outer microtubule doublets (9+0 arrangement) with a modified centriole, known as the basal body. Defects of primary cilia involve in various diseases and disorders. In the kidney, a single primary cilium is recognized on the apical surface of all renal tubular epithelial cells, with the exception of intercalated cells. In the kidney, primary cilia are associated with various kidney diseases including acute kidney injury. Recent evidence has demonstrated that the alteration of primary cilia length is associated with acute kidney injury and acute kidney injury induces detachment, fragmentation or deciliation into urine. Here, we report that the alteration of primary cilia length in the tissue and urinary ciliary protein may be a novel useful biomarker of acute kidney injury.