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Amyloidosis: Role of laser microdissection and mass spectrometry

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Amyloidosis is caused by extracellular deposition of fibrillary proteins. Amyloid deposits are identified on the basis of their apple green-orange birefringence under a polarized light microscope on Congo red stain and the presence of rigid, non-branching fibrils 7.5 to 10 nm in diameter on electron microscopy. Once amyloid is confirmed, typing should be performed. Immunofluorescence and immunohistochemistry are frequently used and are helpful, but this approach has limitations, such as availability, specificity and sensitivity of commercial antibodies. An advanced technique is laser microdissection and mass spectrometry of Congo-red positive amyloid to confirm and type the amyloid. In this presentation, the basics of laser microdissection, mass spectrometry and typing of amyloidosis will be discussed. In addition, recent clinicopathological findings of some unusual types of renal amyloidosis will be presented.