G57 Systemic Amyloidosis in an Intravenous Drug Abuser

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The goal of this presentation is present to the forensic community a case of systemic primary amyloidosis in an intravenous drug abuser.

Recognition of systemic amyloidosis and the subsequent microscopic examination of tissues is important during autopsy. Autopsy pathologists, residents, and pathologists' assistants should be aware of the correlation between systemic secondary amyloidosis and people with a history of illicit drug use/abuse, as well as the possibility of a chronic drug abuser having the primary form of amyloidosis. The type of amyloidosis can be further characterized through immunohistochemical staining of selected amyloid containing tissues.

This poster will present the incidental finding at autopsy of systemic amyloidosis in a 46-year-old African American male that was a former intravenous heroin abuser. Healed track marks were identified on the arms. The patient had cirrhosis and was Hepatitis B and C positive, underwent bimonthly serial paracentesis for refractory ascites, and had congestive heart failure, renal insufficiency, and dyslipidemia. The patient was noncompliant with treatment for his heart condition until 2000, which roughly correlates with the diagnosis of Hepatitis and his last illicit drug use. The patient's social history also includes a 15 pack/year smoking history, six 40-ounce beers per day for 6 years, and cocaine smoking. The patient was admitted to the hospital after paramedics arrived to a complaint at the patient's home of severe testicular edema, the last ascites tap having been performed two days prior. The patient's ascites did not resolve by the administration of albumin, and four litres of ascites fluid were drained three days after admission. The patient had a "seizure" the following early morning, witnessed by his roommate prior to the two attempting to sneak outside for a cigarette. The patient had no recollection of the event. An MRI revealed nothing of significance. Two days later, the patient was found to have a heart rate in the 60s, respirations of 8, and had no detectable blood pressure. Resuscitative efforts were continued for 35 minutes to no avail, and the patient was pronounced dead.

At autopsy, the cut surfaces of the heart and spleen had the typical heavy, waxy, glistening appearance of amyloid deposition. Microscopic sections of the heart, lung, spleen, liver, kidney, gastrointestinal tract, pancreas, thyroid, and prostate revealed amyloidosis, and were positive with Crystal Violet sensitivity and Congo Red specificity staining.

Amyloid is a pathologic proteinaceous deposit that collects in the tissues of persons having an immunologic disfunction. Amyloid has a distinct gross appearance and under the light microscope appears as an amorphous eosinophilic extracellular substance. It is unique that in staining with Congo Red and viewed under polarized light an applegreen birefringence is visible, and the stain has a dramatic appearance with fluorescent microscopy. There are three major biochemically distinct forms of amyloid; the AL (amyloid light chain) type that is derived from immunocyte dyscrasia and is termed primary amyloidosis, AA (amyloid-associated) type that is often associated with people who have chronic inflammatory conditions and is known as secondary amyloidosis, and A beta amyloid, found in the brain and associated with Alzheimer's disease.

Amyloidosis has been cited in the literature to be a major cause of nephropathy in living heroin abusers. A technique used to inject the drug, called "skin popping," is resorted to when there has been such overuse of the vasculature to cause venous thrombosis and scarring of venous access. Skin-popping leads to skin ulcerations from reaction to the injected drug as well as non-sterile technique. Secondary amyloidosis occurs as a complication of this underlying chronic inflammatory process. An extensive search of the literature contains abundant discussion of heroin abuser renal amyloidosis, but few cases discussing autopsy findings of widespread systemic amyloidosis. This patient has extensive manifestation of the disease in virtually every organ in his body. Is this a case of secondary amyloidosis, or rare primary disease in a drug abuser? Either way, the ultimate cause of this patient's death is most likely an arrhythmia due to cardiac amyloidosis.

The widespread distribution of amyloid in the organs did not quite fit with the diagnosis of secondary amyloidosis as seen in other chronic intravenous drug abusers. The amyloid was further characterized as the AL-type through immunohistochemical staining of selected tissues with a negative result for the Amyloid A stain. The classification of an ALtype amyloid diagnose this patient's disease as primary amyloidosis. Careful consideration in the differentiation of either primary or secondary amyloidosis is important in this case, since secondary amyloidosis is the type most commonly associated with chronic drug abusers.

Systemic Amyloidosis, Illicit Drug Abuse, Autopsy Pathology

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