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DOES AMYLOID RADIOTRACER [18F]BF-227 BINDS TO CYTOPLASMIC GLIAL INCLUSIONS?

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Objectives
The accumulation of aggregated alpha-synuclein in multiple brain regions is a neuropathological hallmark of synucleinopathies. A pre-mortem diagnosis tool would improve early diagnosis, and help monitoring disease progression and therapeutic efficacy. One Positron Emission Tomography (PET) study suggested [11C]BF-227 as a promising surrogate marker for monitoring intracellular alpha-synuclein deposition in Multiple System Atrophy (MSA) patients.1 We sought to confirm the binding of this radiotracer to Cytoplasmic Glial Inclusions (CGI) using state-of-the-art autoradiography.

Methods
Medulla sections were obtained from 6 MSA patients and 6 controls. The fluorinated analog of BF227, [18F]BF-227,2 was used at 1 nM. In vitro autoradiography was performed using washes of different ethanol concentrations. Autoradiograms were superimposed on fluorescent staining from the conformational antibody 5G4.2

Results
Autoradiography showed no specific signals in MSA patients vs controls despite widespread pathology detected by immunofluorescence (Fig. 1).

Conclusions
Autoradiography does not support a significant binding of [18F]BF-227 to CGI at nanomolar concentrations.

References

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Keywords
Multiple system atrophy ; alpha-synuclein; radiotracer; autoradiography
Figure 1. Autoradiography with [18F]BF-227 (A) and subsequent immunofluorescence of alpha-synuclein aggregates in red (B) on a single medulla section from MSA patient.