Is There Gliosis in the Autistic Brain?, Year Two

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Autism is a brain development disorder in which patients struggle with social interactions, verbal and non-verbal communication, and show restricted/repetitive behaviors. This study aims to examine gliosis as a possible pathophysiological occurrence in autism by examining levels of GFAP, a known biomarker for gliosis. Glial cells play a key role in brain development and when reactive, increasing in number and size (gliosis),they may severely disrupt neurodevelopment. Previous studies have found elevated levels of GFAP in the frontal, parietal and cerebellar cortices of autistic subjects, which indicates gliosis in these areas. Other studies have established a strong link between increased GFAP and elevated levels of the protein sAPPa. This protein has been found to be elevated in the insular cortex of both severely autistic patients and transgenic mice overexpressing sAPPa. Therefore, the hypothesis is that the insular cortex of autistic patients will also contain higher levels of GFAP, suggesting gliosis in this area. In order to test the hypothesis, a BCA Protein Assay and a Western Blot analysis were conducted on brain homogenate samples of 5 autistic and 5 control samples. The BCA assay aimed to quantify the total protein concentration in order to accurately equalize amounts across samples. In the Western Blot the proteins of the prepared samples were lysed, denatured, and run through a gel by electrophoresis. GFAP is detected using antibody staining and visualized on film. The intensity of the resulting bands is then quantified using ImageJ software. Results show that autistic and control samples appeared to be equal in intensity, suggesting that the levels of GFAP in the samples were the same. These finding don’t support the hypothesis.

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