小児において親がいないことは脳の発達を遅延させる可能性がある (PD01A-02)

長期間にわたり親族に世話をされた小児の灰白質が大きいことがMRIにより示された

MRI reveals larger gray matter volumes in children left in care of relatives for extended periods of time

長期にわたり親の直接的な世話が得られない状態であった小児の灰白質容積が大きいことが示された、と2015年Radiological Society of North America年次集会で発表された。世界中で、政治的混乱、経済的必要性または他の理由により、親は時に数か月または数年間にわたり子供を置いて家を離れざるを得ない。親に置いて行かれた女児および男児(7～13歳)38人のMRI所見が親と共に生活しているコントロールの女児および男児(7～14歳)のMRI所見と比較された。その後、研究者らはそれぞれの参加者群における知能指数(IQ)を計測し、認知機能を評価した。その結果、置いて行かれた小児においては親と共に生活している小児に比べ、複数の脳領域、特に感情の脳回路において灰白質容積が大きいことが明らかにされた。記憶の暗号化や回復に関連する灰白質容積はIQと反比例した。灰白質容積は脳の刈り込みおよび成熟が不十分であることを反映する可能性があり、灰白質容積とIQスコアとの反比例は、親によるケアがない状態での成長は脳の発育を遅延させる可能性があることを示唆する。

Full Text

Researchers in China have found that children who have been left without direct parental care for extended periods of time show larger gray matter volumes in the brain, according to a study presented at the 2015 annual meeting of the Radiological Society of North America (RSNA).

Throughout the world, due to political upheaval, economic necessity or other reasons, parents sometimes are compelled to travel away from home for months or years at a time, leaving their children behind.

In China, large numbers of workers are migrating away from their children in pursuit of better jobs. Researchers wanted to study how this migration has affected the millions of children who have been left in the care of relatives for a period of more than six months without direct parental care from their biological parents.

"We wanted to study the brain structure in these left-behind children," said study author Yuan Xiao, Ph.D. candidate at the Huaxi MR Research Center and the Department of Radiology at West China Hospital of Sichuan University in Chengdu, Sichuan, China. "Previous studies support the hypothesis that parental care can directly affect brain development in offspring. However, most prior work is with rather severe social deprivation, such as orphans. We looked at children who were left behind with relatives when the parents left to seek employment far from home."

For the study, which was led by Professor Su Lui and conducted at the Second Affiliated Hospital & Yuying Children's Hospital of Wenzhou Medical University, MRI exams from 38 left-behind girls and boys (ages 7 to 13) were compared to MRI exams from a control group of 30 girls and boys (ages 7 to 14) living with their parents. The researchers then compared the gray matter volume between the two groups and measured the intelligence quotient (IQ) of each participant to assess cognitive function.

The researchers found larger gray matter volumes in multiple brain regions, especially in emotional brain circuitry, in the left-behind children compared to children living with their parents. The mean value of IQ scores in left-behind children was not significantly different from that of controls, but the gray matter volume in a brain region associated with memory encoding and retrieval was negatively correlated with IQ score.

Since larger gray matter volume may reflect insufficient pruning and maturity of the brain, the negative correlation between the gray matter volume and IQ scores suggests that growing without parental care may delay brain development.

"Our study provides the first empirical evidence showing that the lack of direct parental care alters the trajectory of brain development in left-behind children," Xiao said. "Public health efforts are needed to provide additional intellectual and emotional support to children left behind by parents."

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