Hippocampal alterations in ultra-high risk patients are independent from medication and cannabis use

In their comment on our article entitled “Hippocampal subdivision and amygdalar volumes in patients in an at-risk mental state for schizophrenia,” Borgwardt and colleagues raise some critical questions regarding our finding that hippocampal volume loss is related to an at-risk mental state. Instead, they argue that smaller right hippocampus corpus and tail volumes in ultra-high risk patients (UHR) who later developed schizophrenia compared with those who did not develop schizophrenia may be attributable to cannabis abuse and/or medication effects.

In fact, in our sample, one patient who transitioned into psychosis was taking antipsychotic medication and 7 who transitioned had never taken an antipsychotic. In comparison, in the UHR group that did not transition, 10 were taking antipsychotic medication and 11 were not. Notably, there was no significant difference in right hippocampal corpus and tail volume between these 4 groups ($F_{3,27} = 0.668, p = 0.58$).

Among the UHR patients who transitioned into psychosis, only 1 had previous cannabis abuse (see the 3-month criterion we used), whereas 7 did not use cannabis. Among the UHR patients who did transition, 8 had comorbid cannabis abuse and 13 were free of cannabis abuse. Again, when we compared the volumes of the right hippocampal corpus and tail, we found no significant difference between the groups ($F_{1,27} = 1.146, p = 0.35$).

These findings suggest that the differences in the volume of the hippocampus corpus and tail between UHR patients who transitioned into psychosis and those who did not could not be accounted for by the effect of antipsychotic medication or cannabis abuse. Although 2 previous studies did not reveal hippocampal volume differences between converters and nonconverters, we believe that it would be premature to rule out anatomic abnormalities in UHR states in these brain regions. Our study indicates that hippocampal volume reduction may precede the onset of schizophrenia and may be present in prodromal stages, independent of medication effects or the presence or absence of cannabis abuse.

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References

