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IMAGING TREATMENT CHANGES IN CHRONIC PATIENTS AND CONFOUNDING FACTORS

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1/ In juvenile patients, a cross-sectional ALE meta-analysis of both brain structure and function regional deviations in 270 articles allowed to cluster the diagnosed disorders into three sets with respectively marked affective, cognitive, and psychomotor phenomenology. The group with affective phenomenology was characterized by abnormalities of the frontal-limbic regions; the group with "cognition deficits" (incl. schizophrenia) mainly related to cortex abnormalities; and the psychomotor condition was associated with abnormalities in the basal ganglia. Therefore, early regional brain abnormalities might interact with the analysis of subsequent treatments effects in MR studies of brain structure and function of chronic mental disorders. 2/ In chronic patients, brain imaging studies of antipsychotic drugs using dopamine receptor radioligands & PET scanner have consistently demonstrated the prevalence of their dose-dependent action in basal ganglia. This information has led to theoretical windows for optimal drug dosage. Recent measures of the dopamine transporter in chronic antipsychotic treatment, or in chronic use of drugs of addiction (e.g.. tobacco, cannabis) suggest opposite changes of the radioligand uptake in both conditions. Therefore, control for the associated confounding addictions is required for in vivo analysis of antipsychotic action on the dopamine regulation in cortex and subcortical regions. 3/ In treatment-resistant patients, MR & PET imaging studies have detected deviations of both brain structure and function, therefore suggesting biomarker of treatment response. 4/ Conclusion: stage of illness, addictions, multimodal imaging, should be considered as covariates for brain imaging determinations of treatment effects in patients with chronic mental disorders.