Development of a tailored screening tool to quantify the anticholinergic burden in Swiss patients for improved management of adverse outcomes

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Introduction: Delirium is an acute state of fluctuating awareness and conscience, impaired thinking, attention and memory, imposing a severe burden on patients, on their social environment and healthcare professionals, and leading to increased public health costs. As previous research has shown that one strong risk factor for delirium is imposed by anticholinergic (ACH) drug burden, there is a preventable source of risk for delirium. The obstacle to an immediate implementation of strategies to reduce this burden in clinical practice, especially in patients who are at high delirium risk and who often receive inappropriate medications, is that at the present time, there is no gold standard for its assessment. We therefore aimed for three goals: 1) To find all scales rating ACH burden, 2) to make these scales systematically comparable, and 3) to evaluate their associations with clinical outcomes in patients.

Methods: PART 1: We performed a systematic review to identify all existing ACH burden scales. For this, we searched the literature via MEDLINE and extracted those ACH burden scales that met our inclusion criteria, without limitations of date. Next we analysed the adherent cited references through the Web of Science for the identification of validation studies, evaluating the scale's relation to clinical outcomes for the patient. Thereupon, we adapted the quality assessment tool AGREE II to represent a complete fitted assessment method for the quality of ACH burden scales. Quality assessment will be executed by four researchers for every included scale. The scales' rules for scoring within respective development studies were compared and analysed, and by developing optimal scoring rules and applying them to the included scales, a new scale, tailored to Swiss elderly patients, will be created.
PART 2: We collected patient data at the Kantonsspital Baden (KSB), looked at their ACH medications and extracted delirium status plus its date of onset. Four researchers worked on precise definition of the delirium onset date and interpreted records of patients with a coded delirium but without a date of diagnosis. The newly created ACH burden scale will be tested in practice by retrospective analysis of these patient data in a Case Control study.

Results: Our systematic review of the literature has lead to 15 included ACH burden scales. The encountered scales vary greatly, regarding the assigned scores, their scoring rules, study design, considered aspects, in numbers of studies validating them. 96 validation studies were extracted from a total of 1222 identified records. From 0 up to 38 validation studies have been found per scale. The ARS scale, ADS and most of all the ACB showed the highest level of validation. Validation studies in themselves also showed variance, especially in study designs and studied outcome.

Conclusion: As the available studies' quality varies substantially, and as several scales have either not been or only poorly been validated in clinical settings, more studies are required to substantiate the link of scales and clinical outcomes.