The effect of treatment history on therapeutic outcome: psychological and neurobiological underpinnings.

Abstract: It is increasingly recognized that the efficacy of medical treatments is determined in critical part by the therapeutic context in which it is delivered. An important characteristic of that context is treatment history. We recently reported first evidence for a carry-over of treatment experience to subsequent treatment response across different treatment approaches. Here we expand on these findings by exploring the psychological and neurobiological underpinnings of the effect of treatment experience on future treatment response in an experimental model of placebo analgesia with a conditioning procedure. In a combined behavioral and neuroimaging study we experimentally induced positive or negative experiences with an analgesic treatment in two groups of healthy human subjects. Subsequently we compared responses to a second, different analgesic treatment between both groups. We found that participants with an experimentally induced negative experience with the first treatment showed a substantially reduced response to a second analgesic treatment. Intriguingly, several psychological trait variables including anxiety, depression and locus of control modulate the susceptibility for the effects of prior treatment experiences on future treatment outcome. These behavioral effects were supported by neuroimaging data which showed significant differences in brain regions...
encoding pain and analgesia between groups. These differences in activation patterns were present not only during the pain phase, but also already prior to painful stimulation and scaled with the individual treatment response. Our data provide behavioral and neurobiological evidence showing that the influence of treatment history transfers over time and over therapeutic approaches. Our experimental findings emphasize the careful consideration of treatment history and a strictly systematic treatment approach to avoid negative carry-over effects.

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