Is Belief More Powerful than Morphine?

Continua
HOSPICE LEARNING

How Patient Expectation Can Enhance Drug Effectiveness

In 2011 a study was done to see how patients' beliefs and expectations of benefit or adverse effect can directly influence their response to opioid analgesic therapy. Pain values were measured by:

- The patient's self report of how much pain he/she was having
- fMRI (functional magnetic resonance imaging) - used to record brain activity to corroborate the patient's subjective responses and reveal underlying neural mechanisms

The Study

- All Subjects started on IV normal saline. An external heat stimulus was applied to the skin at a level sufficient for each subject to rate the pain at 70 on 1-100 scale.
- A set amount of IV opioid was added to the IV in ALL of the subjects (subjects were not told).
- 3 experimental conditions were set:

Test 1 - The subjects **were not told they were receiving an IV opioid** in order to see what impact it would have when they had no knowledge or expectation of receiving a pain relief treatment.
Test 2 - Subjects **were told the IV opioid drug would start** being administered now, in order to see what impact it would have when they expected to receive pain relief treatment – although no change was made in the continuing medication dose.
Test 3 - Subjects were **told the pain medication was discontinued** – (when it was in fact not discontinued - but continued) and warned that the pain might increase – in order to create an expectation of an increase in pain.

Outcomes

Test 1 – Average initial pain rating of 66 decreased to 55 =17% decrease in pain. This change characterized the baseline analgesic effect of the opioid alone.
Test 2 – when subjects were told the analgesic was started – average pain rating dropped to 39 - another 29% decrease in pain.
Test 3 – average pain rating went back up to 64 – close to the beginning rate, even though no change was made in the analgesic dose all along.
These subjective reports were also evidenced by changes in neural activity in brain regions involved with the coding and interpretation of pain intensity.

Conclusion

Positive treatment expectancy enhanced (nearly doubled) the pain-relieving benefits of the analgesic. The patients who believed they were receiving opioid medication rated better pain control than patients who believed they weren't – even though each test group received the same amount of medication.

Brain imaging studies show that positive expectations or beliefs ("I know this medication will help.") can incur neurobiological changes (largely in the limbic regions of the brain) and affect levels of chemical messengers and their receptor molecules that modulate pain. Aside from modulation of pain, endorphin activation uplifts mood and reduces the stress response.

Conversely, anticipation of pain or harm can influence brain activity and reports of pain in opposite ways to produce adverse reactions. In other words, because the subjects anticipated pain they were more likely to experience it.

Reference

Bingel U, Wanigasekera V, Wiech K, et al. The Effect of Treatment Expectation on Drug Efficacy: Imaging the Analgesic Benefit of the Opioid Remifentanil. Sci. Transl. Med. 2011;3:70ra14 From a post by SB Leavitt on Pain-Topics.org News/Research Updates at http://pain-topics.org