Rainer Trittler[1], Aly Abotaleb[1], Christopher Böhlke[2], Klaus Offner[3], Martin J. Hug[1], Gerhild Becker[2]

Metamorphine instead of polysubstance use?

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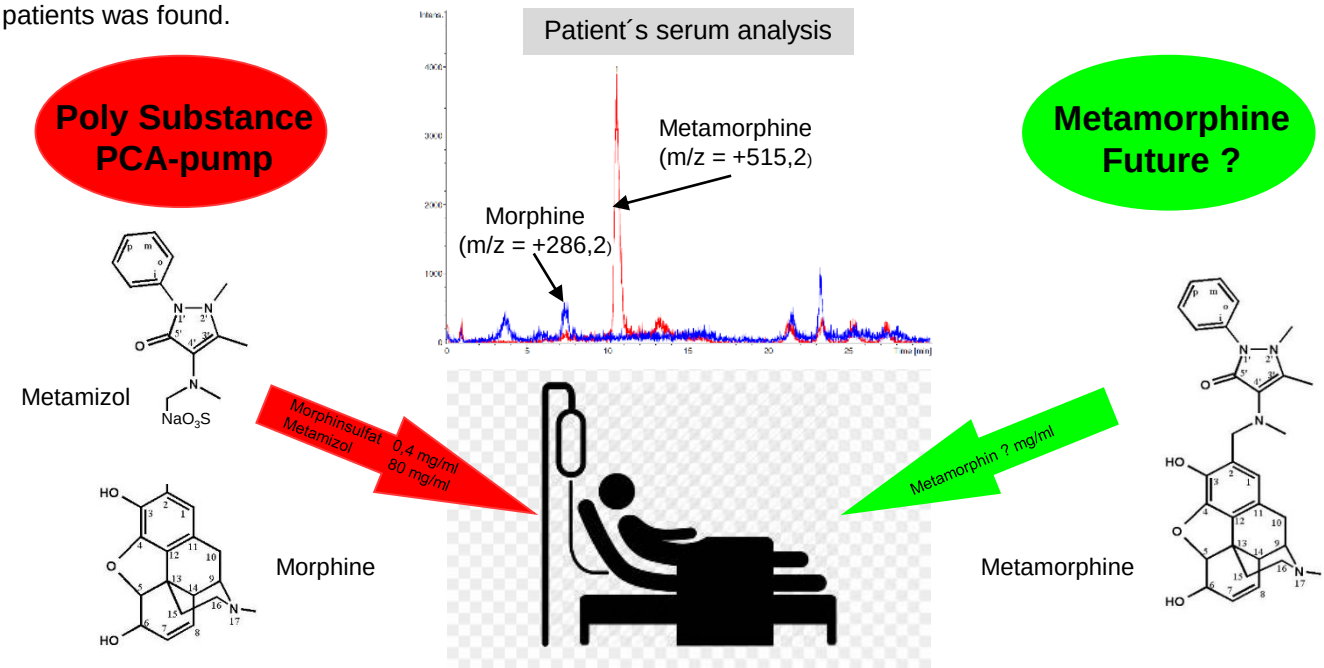
University Medical Center, Freiburg, Germany

[1]Pharmacy
[2]Department of Palliativ Care
[3]Anaesthesiology and Intensive Care

Background and Importance Opioid therapy is still not optimal. As PCA pumps with combinations of opioids and NSAR are produced in many hospital pharmacies to minimize the dose and the side effects of opioids, this polysubstance use is accompanied by incompatibility problems. Several admixtures with opioids and metamizole change their composition during administration time. In case of admixtures with morphine and metamizole, we could define and isolate the main reaction product „metamorphine“. Dependent on morphine concentration, storage temperature and storage time, PCA-pumps with admixtures of metamizol and morphine can contain 100% metamorphine instead of morphine.

Aim and Objectives As the stability problems did not result in a change of the prescribing routine, the pharmacology of this new substance was interested, especially because the PCA pumps still had their analgesic potency and new adverse effects were never reported.

Results: We determined the morphine and metamorphine concentrations in serum of four patients treated with admixtures of morphine/metamizole. In 3 of them we could identify or quantify metamorphine beside morphine. In one patient serum we found 0,75µg/mL metamorphine beside a morphine concentration of 0,16µg/mL. Metamorphine was detected in the other patients but the levels were <0,4µg/ml (our quantification limit for metamorphine). No loss of the analgesic effect and no change of adverse effects during PCA therapy of all four patients was found.



Material and methods: After permission of the Ethics Committee and informed consent, Morphine and metamorphine was determined in serum samples of four patients with regular morphine/metamizole PCA therapy. LC-MS analysis were performed with a qTOF (Bruker).

Conclusions Incompatibilities of polysubstance use in PCA pumps can also generate other active substances than prescribed. Since patients do not notice a loss of the analgesic potency or change of side effects and the serum level of morphine decreased significantly, it is very likely that metamorphine has analgesic and/or spasmolytic potency and compared to morphine alone its effects to µ-, κ- and δ-opioid receptors may be different. The study is relevant to understand a successful, well-established therapy and leads possibly to a new optimized opioid therapy.

corresponding author: rainer.trittler@uniklinik-freiburg.de