HYPER-ALGESIA: A LITTLE KNOWN CONDITION IN PAIN ASSESSMENT AND PAIN CONTROL

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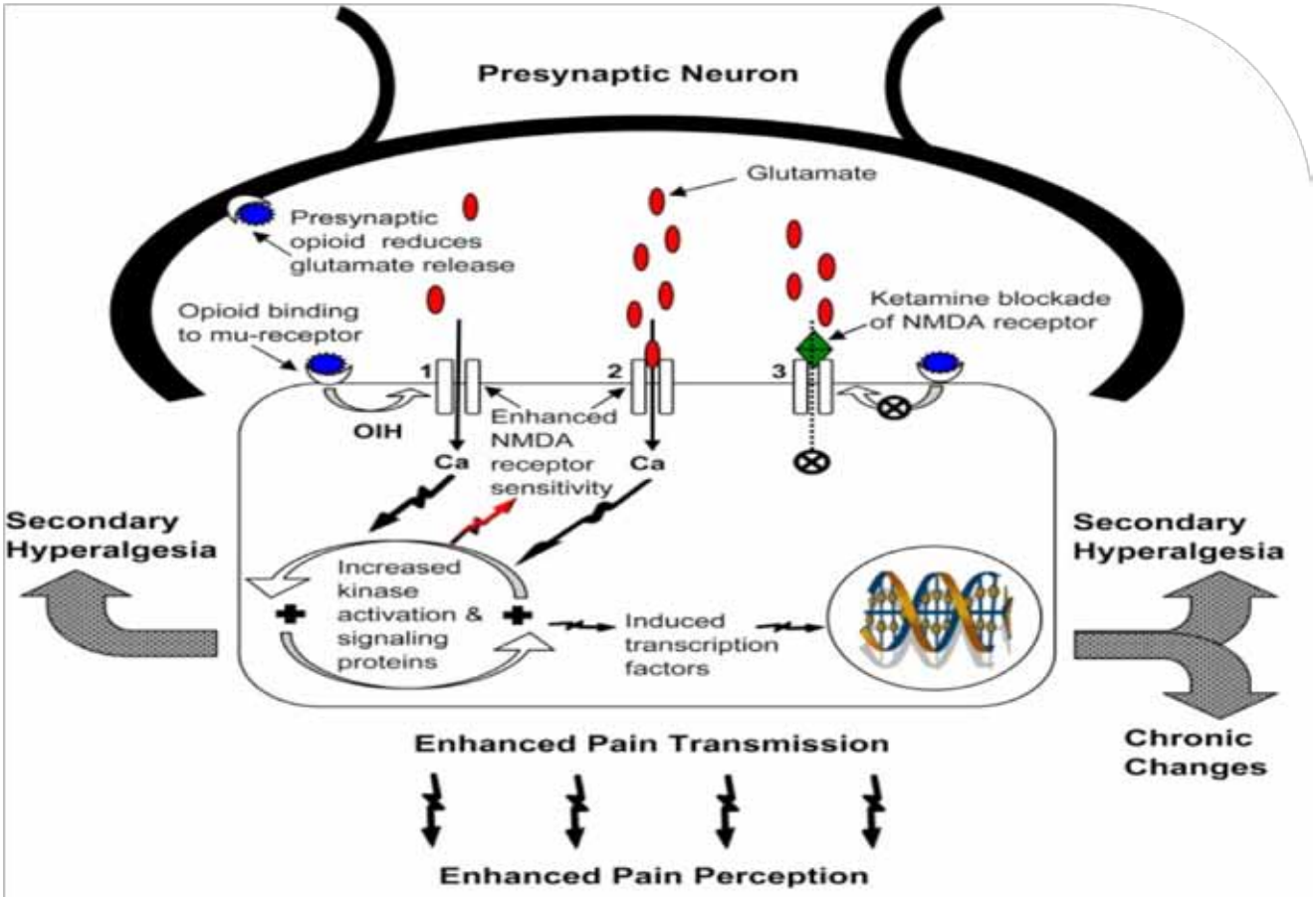
HYPER-ALGESIA is a perception of pain out of the proportion to a given stimulus. This is a poorly understood condition that may impact outcomes of patient care and long term pain-control. A stimulus of pain that activates a cascade in the pre-synaptic neurons at NMDAR causes repeated messages via the dorsal horn of the spinal column.

HYPER-ALGESIA PATHWAY:

- Calcium enters the cell by way of the NMDA channel activation.
- Intracellular signals take paths to cause increase pain transmission.
- Neural signal repeats pain pathway.



Calcium entry into the cell via NMDA channel activation leads to the activation of intracellular signaling pathways causing increased sensitivity, increased transmission, and changes in neural signaling in the spinal cord.

1. Working via intracellular signaling pathways, opioids can cause activation of NMDA receptors allowing calcium passage through the channel, even without strong glutamate activity. This causes opioid-induced hyperalgesia (OIH).
2. Glutamate binding activates NMDA receptors allowing calcium passage through the channel. In both 1 & 2, increased intracellular calcium leads to increased NMDA receptor sensitivity and the development of OIH or secondary hyperalgesia.
3. Ketamine blocks the NMDA receptor channel. This prevents direct glutamate and indirect opioid activation of the NMDA channel from causing calcium entry into the cell thereby reducing hyperalgesia.

The novel wireless telemetry system detected

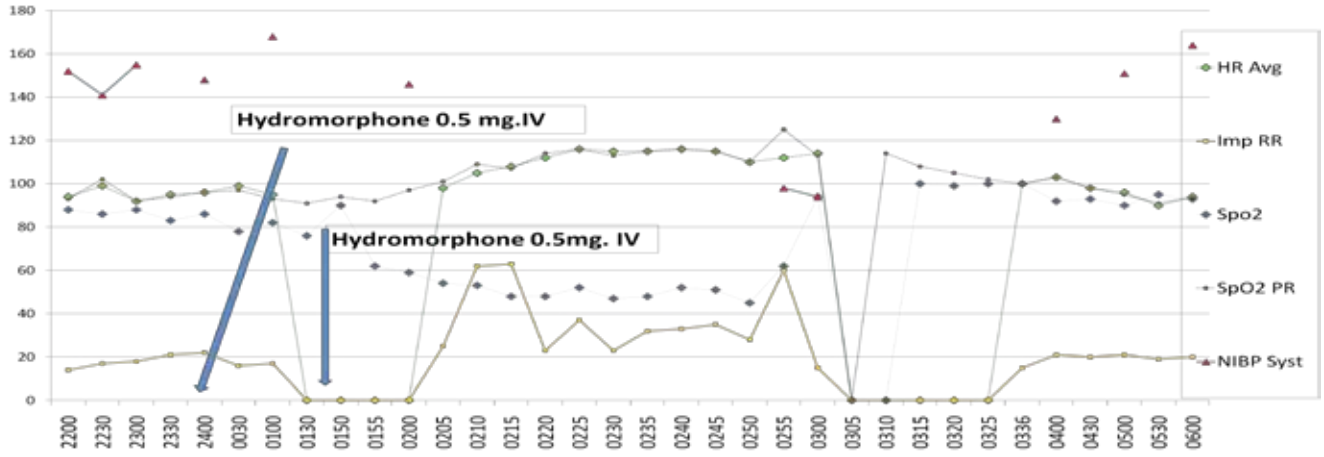
V/S of patient condition relating to HA. Study participant consented to wear device for 24 hours. Recorded vital signs of B/P, EKG, lead ll tracing with respiration, HR and SpO2 data from the non- invasive monitor.

Study FNTX 0549 (C)Participant HX: 51years of age signed consent preoperatively. Surgery admission for LTKR.

Allergic- Codiene (pruritis), HTN, Asthma, with bronchitis reported 1X each yr. Non-compliant with OSA TX of CPAP. Renal insufficiency, Type II diabetes, V/S -SpO295%, B/P 104/69, HR 83, Ht.159cm., Wt.113Kg.

IV meds given perioperatively; **Fentanyl, Midazolam**,Propofol, **Hydromorphom**e.

Medications administered while on study that manifested as HA and led to Rapid response call; **Hydromorphone 4mg.,Oxycodone** SR 20 mg., **Oxycodone 1**0mg.p.o., Phenergan 12.5mg. Trazadone100mg.



Conclusion: With the innovation of a wireless defensive monitoring-device, technology offers safer surveillance of vital signs during postoperative stays. Patients requiring drug intervention for pain can receive safer care by a real time notification system and avoid the potential crisis of over sedation.