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When Kristina was found in 3x3, she had puncture wounds, which implies that Red John used needles on her.

1. Usage of drugs to induce Cotard's syndrome

Kristina's condition of experiencing existential death can be identified as Cotard's syndrome. She believes she is dead, and has no recollection of what happened when she was kidnapped by Red John. This syndrome can be caused by the usage of certain drugs via intravenous administration which explains the puncture wounds.

- Hallucinogens can induce severe distortion of reality perception in victims, causing detachment, depersonalisation, and derealisation. These substances disrupt the brain's Default Mode Network (DMN) which facilitates self-referential thinking and identity processing. These drugs interact with serotonin and glutamate receptors to cause hyperactivity in areas of the brain involved in self-awareness and perception. Some drugs are, namely, Lysergic Acid Diethylamide, Phencyclidine, and Ketamine.

- Dissociative drugs induce dissociation by impairing the glutamatergic system. These drugs block the process of glutamate, a neurotransmitter involved in cognition and memory, and disrupt regular brain function, particularly in areas related to self-awareness and sensory processing. They alter the prefrontal cortex, thalamus, and parietal lobes, causing depersonalisation and derealisation. One such drug is Ketamine.

- Antidepressants and Antipsychotics can induce symptoms akin to Cotard's syndrome when consumed in high doses. Antidepressants affect serotonin levels which are critical for perception and cognition. Antipsychotics block dopamine receptors, and dopamine plays an integral role in the mesolimbic pathway, mesocortical pathway, and nigrostriatal pathway, essentially causing emotional numbing, cognitive dysfunctions, and negation of movement. Such drugs are Tricyclic Antidepressants and Selective Serotonin Reuptake Inhibitors.

- Benzodiazepines and Barbiturates are Central Nervous System depressants that can cause unconsciousness and impair perception when consumed in overdose by enhancing Gamma-Aminobutyric Acid activity, leading to disorientation and cognitive impairment. In severe cases, victims can suffer from loss of memories and a lack of self-awareness.

- Valacyclovir metabolises into acyclovir which causes neurotoxicity, imposing side effects to the Central Nervous System. The accumulation of toxicity interferes with neuronal signaling, disrupting brain regions responsible for perception and self-awareness. Acyclovir toxicity is also

linked to encephalopathy, which can be characterised by hallucination and altered perception of reality.

- Cefepime crosses the blood-brain barrier and interferes with Gamma-Aminobutyric Acid (GABA) transmission in the Central Nervous System, hence disrupting the brain's inhibitory pathways, leading to overstimulation of the Central Nervous System. This disruption can cause cortical hyperexcitability, leading to confusion and altered consciousness. Overactivation of regions like the prefrontal cortex and temporal lobes could lead to misinterpretations of sensory inputs, fostering delusions. Cefepime-induced encephalopathy often leads to agitation, delirium, and visual hallucinations, which are foundations for the development of Cotard's syndrome.

In summary, Cotard's syndrome can be a consequence of adverse drug reactions.

Sources:

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2. Blood extraction

This was stated by Cho, that the puncture wounds were there because Red John extracted blood from Kristina.

- Blood extraction causes psychological shock which makes Kristina more susceptible to delusional beliefs. It also creates a stress response and activates the Hypothalamic-Pituitary-Adrenal axis, which can impair rationality and memory via elevated cortisol levels.

- Blood loss causes hypovolemia, causing a compensatory increase in heart rate and vasoconstriction to maintain blood pressure. Since the drugs were intravenously administered, this increase in rate of blood circulation helps by accelerating the distribution of drugs, and even prioritising blood circulation to more important parts of the body like the brain. This also further impairs the prefrontal cortex as it is sensitive to oxygen and glucose deprivation.

Due to the contextual evidence of the puncture wounds, usage of needles, and blood loss, this is a far more plausible interpretation in dichotomy to Red John purely manipulating Kristina when Occam's Razor is imposed.