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Dexmedetomidine (Precedex) Induced Fever

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Dexmedetomidine (Precedex) Induced Fever

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Introduction

- Precedex is an intravenous, α -2 receptor agonist broadly used for analgesia, maintenance of sedation, and alcohol withdraw treatment in the intensive care unit (ICU)².
- The most commonly reported adverse effects associated with precedex are hypotension and bradycardia¹.
- Fever has been reported with a 5-7% incidence rate¹.
- Our case shows a very impressive pyrexia in a 49 year old patient most likely associated to precedex. When compared to the previously three reported cases his fever reached the largest value (T= 107°F)^{1,4,5}.

Case Presentation

- 49 year old male who first presented for evaluation of progressively worsening jaundice, abdominal pain, fever, nausea, vomiting, and episodes of confusion.
- Multiple abdominal images showed: signs of cholangitis, dilated bile duct, and type I choledocal cyst.

Intervention and Treatment

- Day 1 → Antibiotic (zosyn), acetaminophen for fever, GI and hepatobiliary surgery consult
- Day 2 → ERCP with Stent placement
- Day 3 → 24 hours without fever
- Day 7 → 120 hours without fever and last day of antibiotic
- Day 8 and 9 → Stent dislodged, went for a second ERCP where vomited and became hypoxic. Hence patient was intubated and upgraded to ICU. In the ICU he was kept intubated and was started on precedex at 0.2 mcg/Kg/Hr, at 23:04 pm. Current temperature was 98.3°F
- Because of agitation precedex was increased every hour at a rate of 0.5 mcg/kg/ Hr. (Fig. 1)
- 5 hours after precedex was initiated patient developed fever (T: 101.8) – started on antibiotic, cultures drawn, urinary foley replaced, acetaminophen given
- Day 10 and 11 → Constantly febrile, cultures came back negative, patient's temperature reached 107°F that is when precedex was stopped and 6 hours after that his temperature normalized.

Figure 1: Temperature to Precedex Relationship

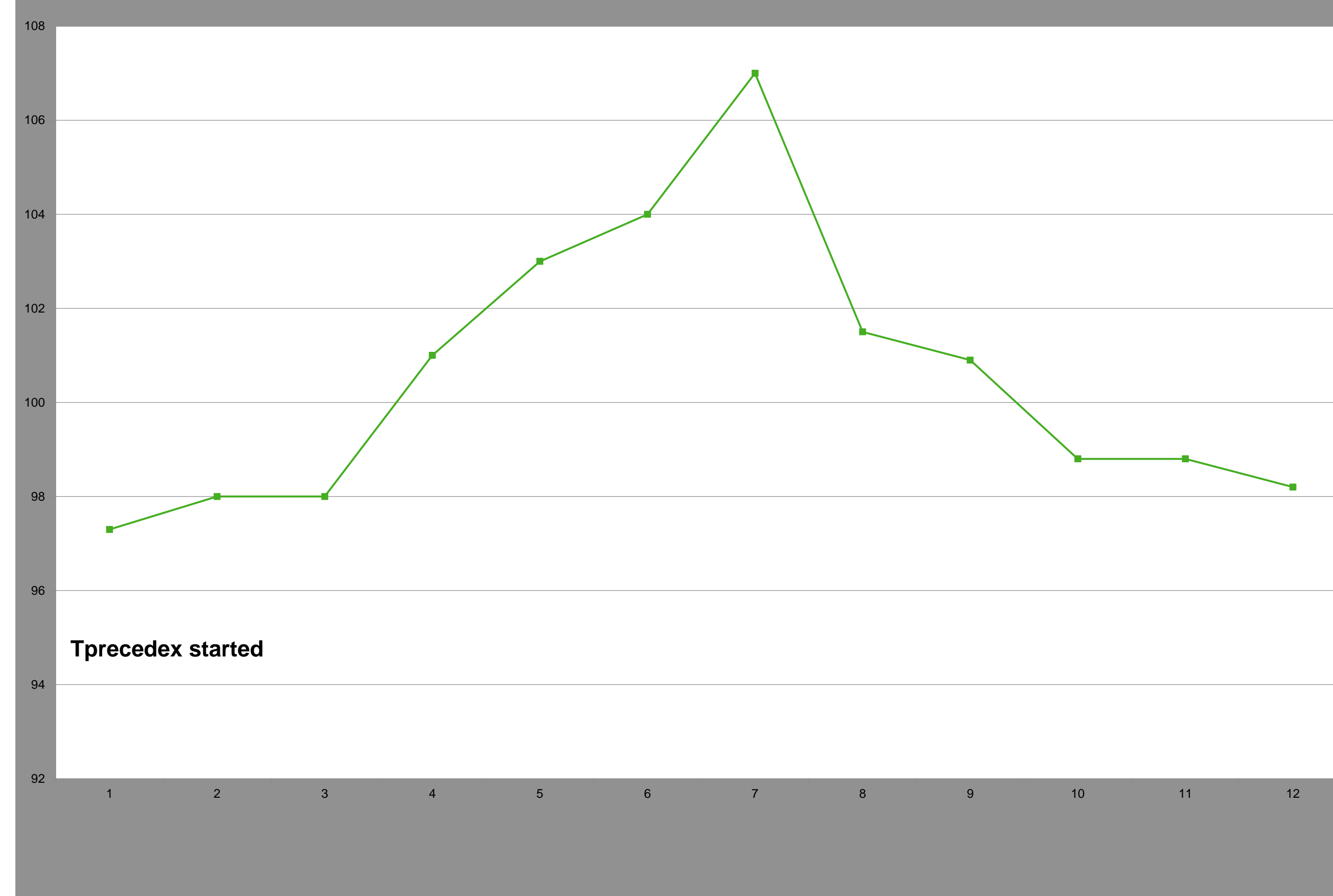


Figure 2: The Naranjo algorithm is a questionnaire to determine the likelihood of adverse drug reaction – > 9 (definite), 5-8 (probable), 1-4 (possible), 0 (doubtful)⁷

Naranjo's Algorithm

Question	Yes	No	Don't Know
1. Are there previous conclusive reports on this reaction?	+1	0	0
2. Did the adverse event appear after the suspected drug was administered?	+2	-1	0
3. Did the adverse reaction improve when the drug was discontinued or a specific antagonist was administered?	+1	0	0
4. Did the adverse reaction reappear when the drug was re-administered?	+2	-1	0
5. Are there alternative causes (other than the drug) that could on their own have caused the reaction?	-1	+2	0
6. Did the reaction reappear when a placebo was given?	-1	+1	0
7. Was the drug detected in the blood (or other fluids) in concentrations known to be toxic?	+1	0	0

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Discussion

- Precedex is a potent and selective α -2 adrenergic receptor agonist with excellent sedative properties that works mostly on the central receptors.
- Due to recent critical care studies, precedex have been widely used in the treatment of alcohol and delirium treatments, and as a sedative agent for intubation.
- Although uncommon, providers need to know about the possibility of fever as a side effect from precedex.
- Any drug can cause drug fever. No specific reason is available for diagnosis, and thus drug fever is assumed to have been present when the temperature rapidly returns to normal within 48–72 hours after discontinuation of a suspicious drug¹.
- In our case report, the temporal relationship of the patient's temperature response and initiation of precedex, plus the sterility of culture and a 5 on the Naranjo's algorithm³ would strongly implicate the drug was the causative agent of the fever. (Fig. 2)
- Prior to this case, there have only been three case reports which implicate precedex as the cause of fever with maximum temperature of 105°F^{1,4,5}.
- In our case, the patient was afebrile for 120 hours and then developed fever approximately 5 hours after precedex started, reaching a maximum temperature of 107°F when precedex was being dosed at 0.5 mcg per Kg. It was noted that his temperature was rising as precedex dose was being increased. Patient's temperature returned to normal 6 hours after discontinuation of the drug.
- The reason for the fever induced by precedex is unknown but it could be due to allergic drug reaction, although there is no scientific evidence⁴.

Conclusion

- Precedex is a medication used largely for sedative purposes in the ICU with the most common side effects being bradycardia and hypotension. Upon review of the medical literature, it was found that fever can occur in only 5-7% of patients.
- As its use becomes more and more common in the ICU, clinicians should be aware of this adverse effect especially in patients whose fevers are refractory to acetaminophen and temperatures that are higher than 104°F.