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Post-COVID Baroreflex Failure

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Post-COVID Baroreflex Failure.

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History of Present Illness:

- The patient contracted COVID 19 with sever pneumonia that was complicated by prolonged hospitalization from 10/12/2021.
- Hypertensive episodes (up to 200 s mmHg) associated with severe headache and flushing.
- Hypotensive episodes (down to 60 s mmHg) associated with drowsiness and confusion.

Review of other symptoms:

- Eye: blurring vision with blood pressure fluctuations, mostly during postural changes.
- GI: Nausea, Vomiting, alternating diarrhea and constipation
- GU: episodes of urinary retention followed by episodes of polyuria

Past Medical History:

- Type II DM (HbA1c 7.4) on Sitagliptin and Metformin.
- Psoriatic arthritis on Adalimumab (Humira) and Methotrexate.
- BPH on Finasteride.

Physical Exam

- Gen: Appearance resting supine in bed Alert, awake, oriented x 3.
- Eyes: miotic but reactive to light bilaterally.
- Neurological: Muscle strength 5 DTR 2 no sensory deficit
- Neck: no JVD, no masses or swelling.
- Respiratory: Clear lung sounds.
- Cardiology: RRR, No murmurs

Results

	Blood pressure	Heart rate	Symptoms
Supine	89/63	65	Lightheaded
Stand 1 min	94/63	95	
Stand 3 min	91/61	91	Lightheaded, short of breath
Stand 5 min	101/69	102	More short of breath
Stand 8 min			
Stand 10 min			
Recovery	118/76	97	

Table 1: Tilt table testing

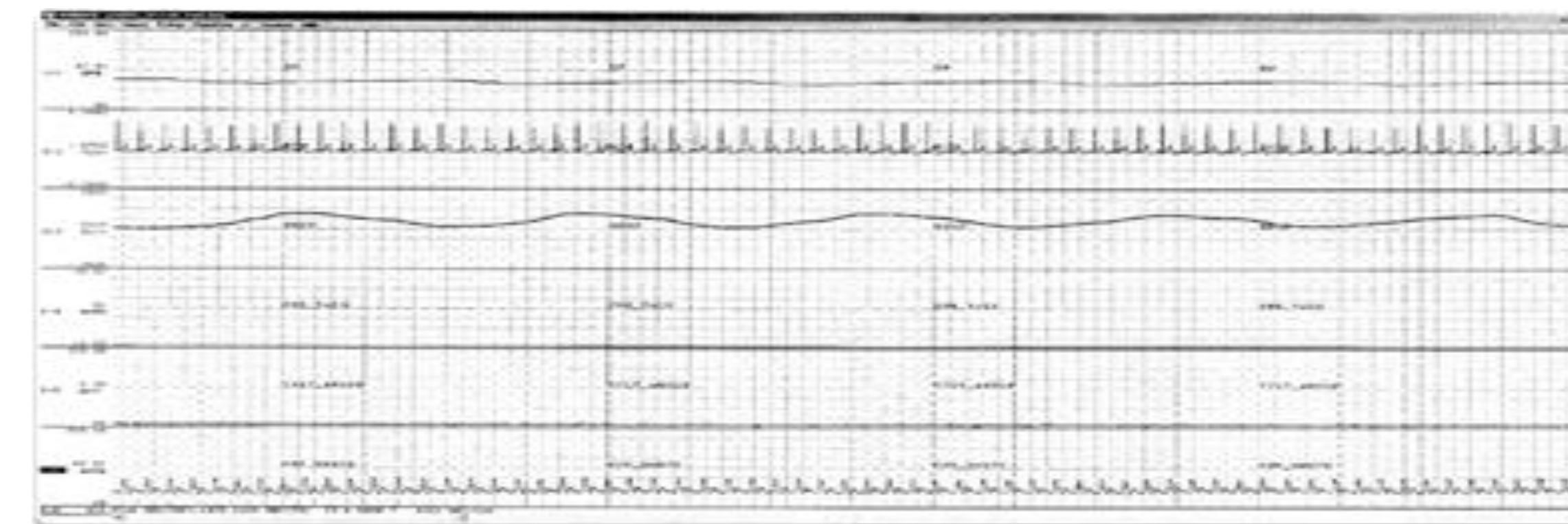


Figure 1: Controlled Breathing test (parasympathetic function)



Figure 2: Valsalva Maneuver test (Sympathetic function)

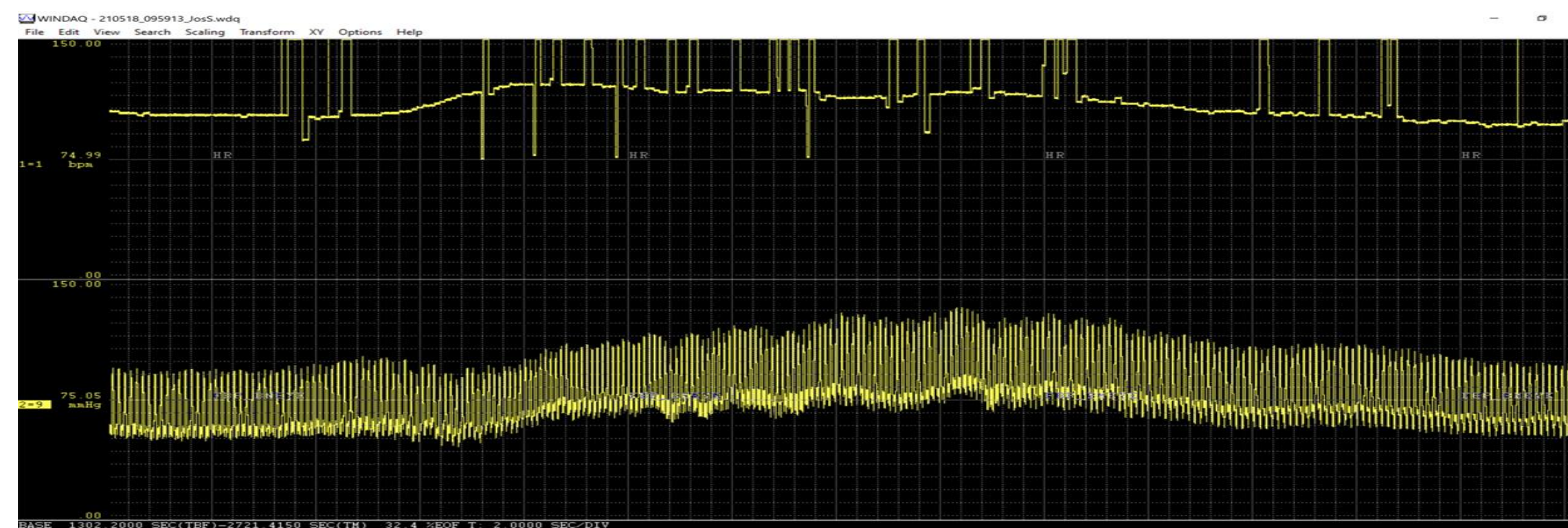


Figure 3: Cold pressor testing

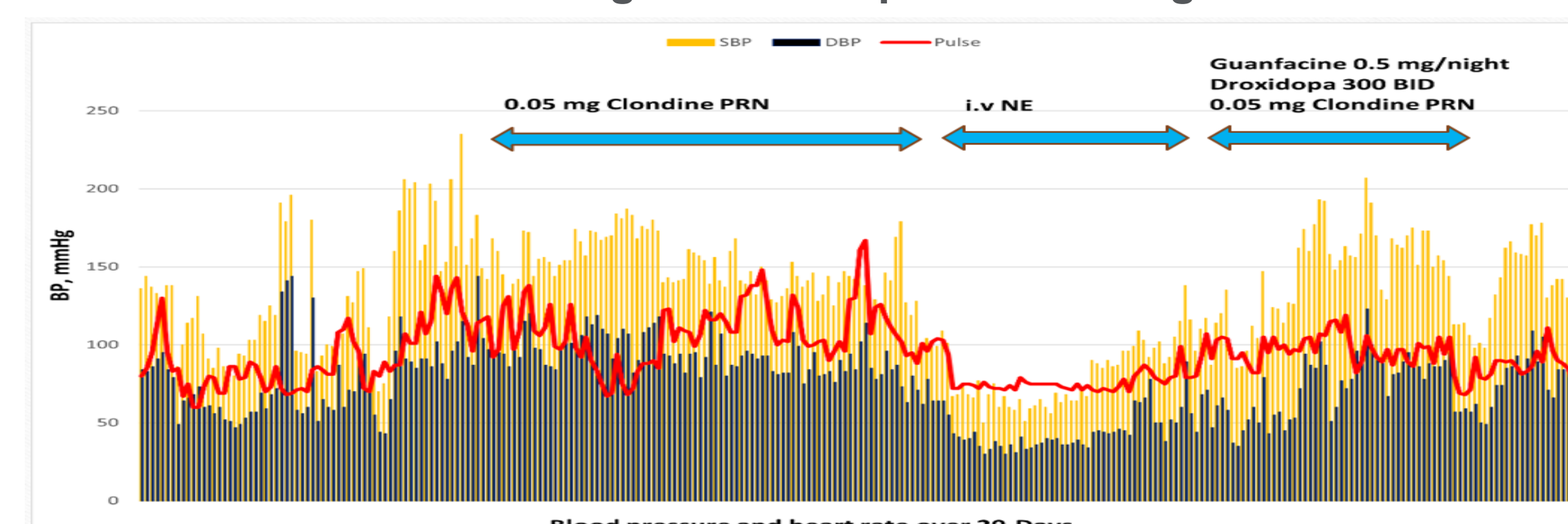


Figure 4: blood pressure changes during the admission

Workup

- Tilt table testing (table 1): orthostatic tachycardia with a syncopal episode.
- Controlled breathing test (Figure 1) Showed loss of parasympathetic tone.
- Valsalva Maneuver (Figure 2) Impaired sympathetic tone.
- Cold pressor testing (Figure 3) Intact tone.

Final Diagnosis

Baroreflex failure

Clinical picture of Baroreflex Failure

- Hypertensive crisis (87 %): severe hypertension BP 250 mmHg, tachycardia, and headache.
- Volatile Hypertension (78 %): under any physical or mental stress.
- Orthostatic hypotension (91%).
- Syncope (58%)
- Tachycardia (20%), Bradycardia (5%).
- Headache (22 %), Sweating and flushing (14%)

Treatment

- Hypertension is mainly driven by mental stress and sympathetic surges → So the main therapeutic approach is using long acting central sympatholytic like Guanfacine and Methyldopa.
- Short acting sympatholytic like clonidine can be added if hypertension is not controlled by long acting ones, but can't be used alone as it may cause rebound hypertension.
- Hypotensive episodes can be treated by adequate hydration, increase salt intake, if needed use short acting vasopressor as Midodrine or Droxidopa.