Jugular Venous Pressure Examination and Interpretation

The **jugular venous pressure (JVP)** is an **indirect marker of right atrial pressure**, reflecting **central venous pressure (CVP)**. It is clinically observed via the **internal jugular vein (IJV)** due to its anatomical continuity with the **superior vena cava** and **right atrium**.

Why JVP Matters

- Elevated JVP = **Right-sided heart pathology**
- Decreased JVP = **Hypovolemia or distributive shock**
- JVP provides valuable information about **volume status**, **right heart function**, and **cardiac pathology**

Anatomical Basis

- The **right internal jugular vein** is preferred for assessment as it directly drains into the SVC.
- The **external jugular vein** is more visible but less reliable due to valves and indirect drainage.
- The **left IJV** is less ideal due to compression by thoracic structures.

Normal JVP

- Measured from the **angle of Louis (sternal angle)**:
  Normal JVP ? 3–4 cm above the sternal angle
  Since the sternal angle is ~5 cm above the right atrium:
  CVP = JVP + 5 cm H?O

How to Measure JVP Clinically

1. **Positioning**: Patient reclined at 45° angle, head turned slightly left
2. **Lighting**: Use tangential lighting to observe pulsations
3. **Landmark**: Locate the IJV between the heads of the **sternocleidomastoid (SCM)** and trace toward the earlobe
4. **Measurement**:
   - Measure vertical distance from the sternal angle to the top of visible pulsation
   - JVP > 4 cm = **elevated**

Distinguishing JVP from Carotid Artery Pulsation

Use the **mnemonic POLICE**:

Feature	JVP	Carotid Pulse
P alpable	No	Yes
O cclusion	Disappears	Persists

Feature	JVP	Carotid Pulse
L ocation	Lateral to carotid, behind SCM	Medial
I nspiration	Decreases	No change
C ontour	Biphasic	Single beat
E rection (Position)	? with sitting, ? supine	No significant change

Hepatojugular Reflex

- Apply pressure to RUQ for ~15 seconds
- **Positive sign** = Sustained rise in JVP
- Indicates **right ventricular failure**

Waveform Components of Normal JVP

The jugular pulse has **three upward waves (a, c, v)** and **two downward waves (x, y)** :

Wave	Description	Clinical Correlate
a wave	Atrial contraction	Just before S1
x descent	Atrial relaxation	During systole
c wave	Tricuspid valve bulging during RV systole	Minimal in healthy individuals
x' descent	Downward pull of tricuspid	Reflects RV contractility
v wave	Passive venous filling during systole	After carotid pulse
y descent	Opening of tricuspid, rapid ventricular filling	Follows v wave

Abnormal JVP Findings and Clinical Implications

1. Raised JVP with Normal Waveform

- Right-sided heart failure
- Fluid overload
- Bradycardia

2. Raised JVP with No Pulsation

- **Superior Vena Cava (SVC) Obstruction**
  - Veins are engorged, non-pulsatile
  - Associated with facial edema, cyanosis

3. Large 'a' Wave

- **Tricuspid stenosis**

- **Pulmonary hypertension**
- **Pulmonary stenosis**

4. Cannon 'a' Waves

Occurs when **atrium contracts against a closed tricuspid valve** :

- Complete heart block
- Ventricular tachycardia
- Atrial flutter with AV dissociation

5. Absent 'a' Wave

- **Atrial fibrillation**

6. Prominent 'v' Wave (C-V Wave)

- Seen in **tricuspid regurgitation**
- Continuous rise during systole

7. Slow ‘y’ Descent

- **Tricuspid stenosis**

8. Kussmaul’s Sign (Paradoxical Rise with Inspiration)

- **Constrictive pericarditis**
- **Pericardial tamponade**
- **Right ventricular infarction**

9. Absent JVP in Hypovolemia

- Common in **shock** , **hemorrhage** , **severe dehydration**

Key Clinical Tips

- Always assess **JVP on the right side** .
- Use **two rulers** : one for horizontal distance from the sternal angle, the other for vertical height.
- If not visible:
  - Lower the bed to 0° (supine) for low pressures
  - Raise to 90° if column is high