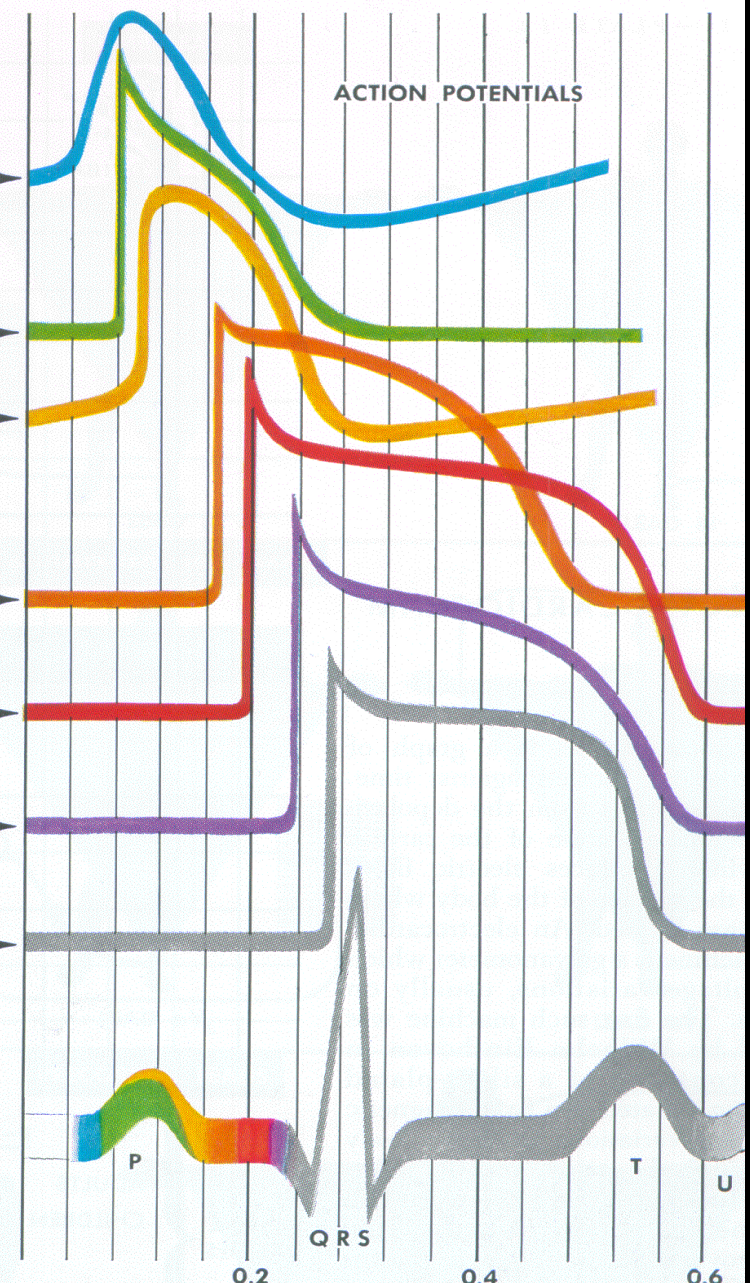
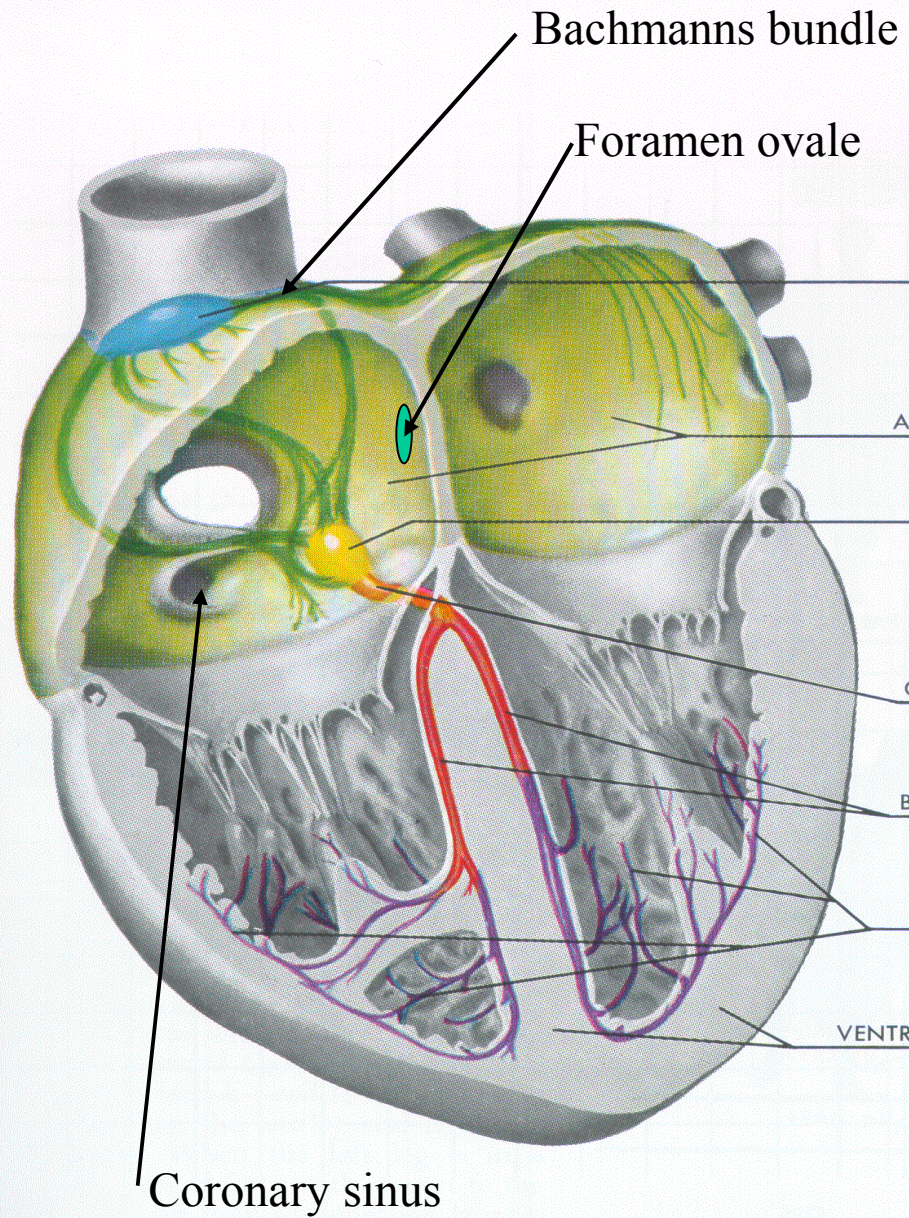


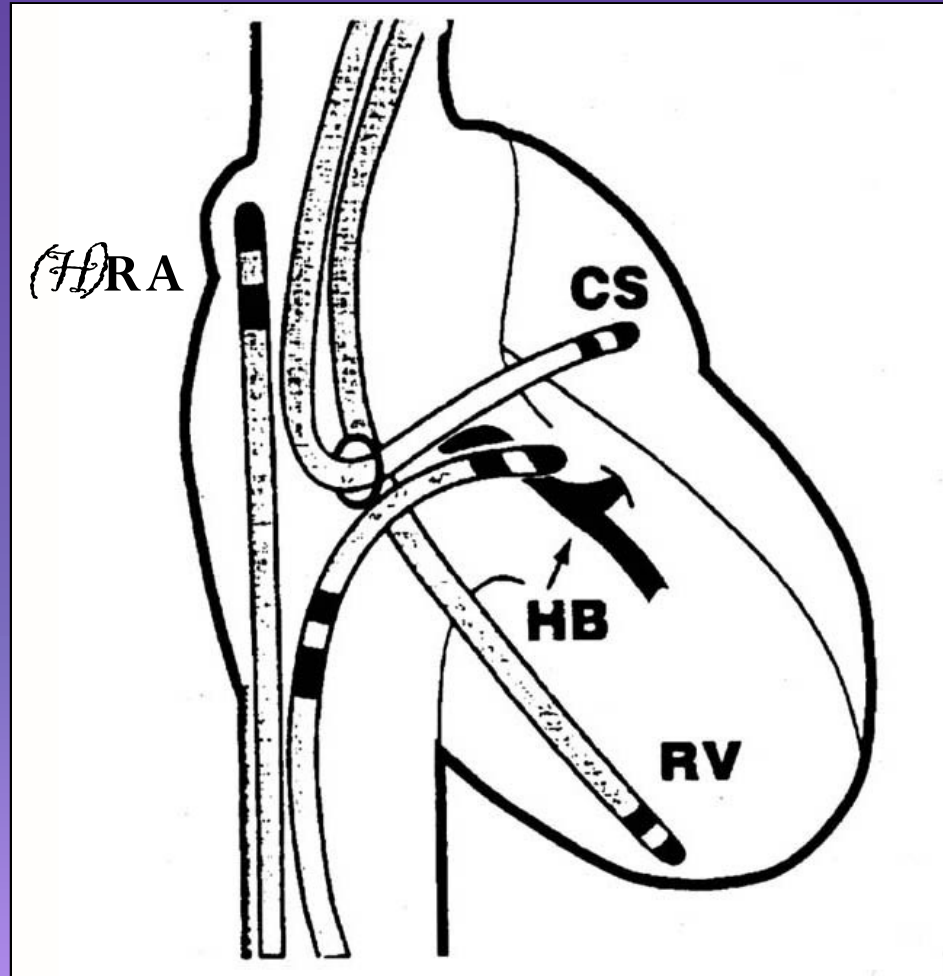
Over view of EP-studies

Basics of EP-study



Typical Catheter Placement

(**H**)**R**A
Corona**r**y **S**inus
His **B**undle
Right **V**entricle



Basics of EP-study

Recordings of electrical activation

Electrical stimulation

4

3

2

1

Catheter

Myocard

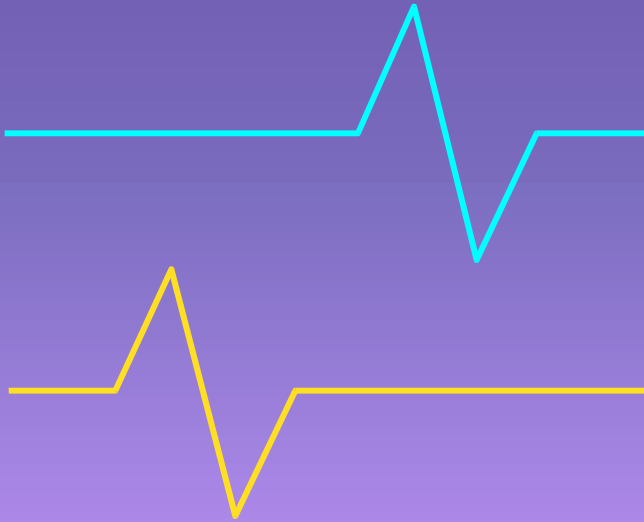
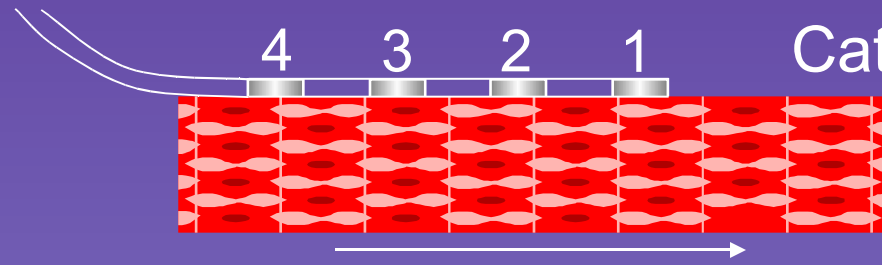
Electrical activation

Recording 1-2

Recording 3-4

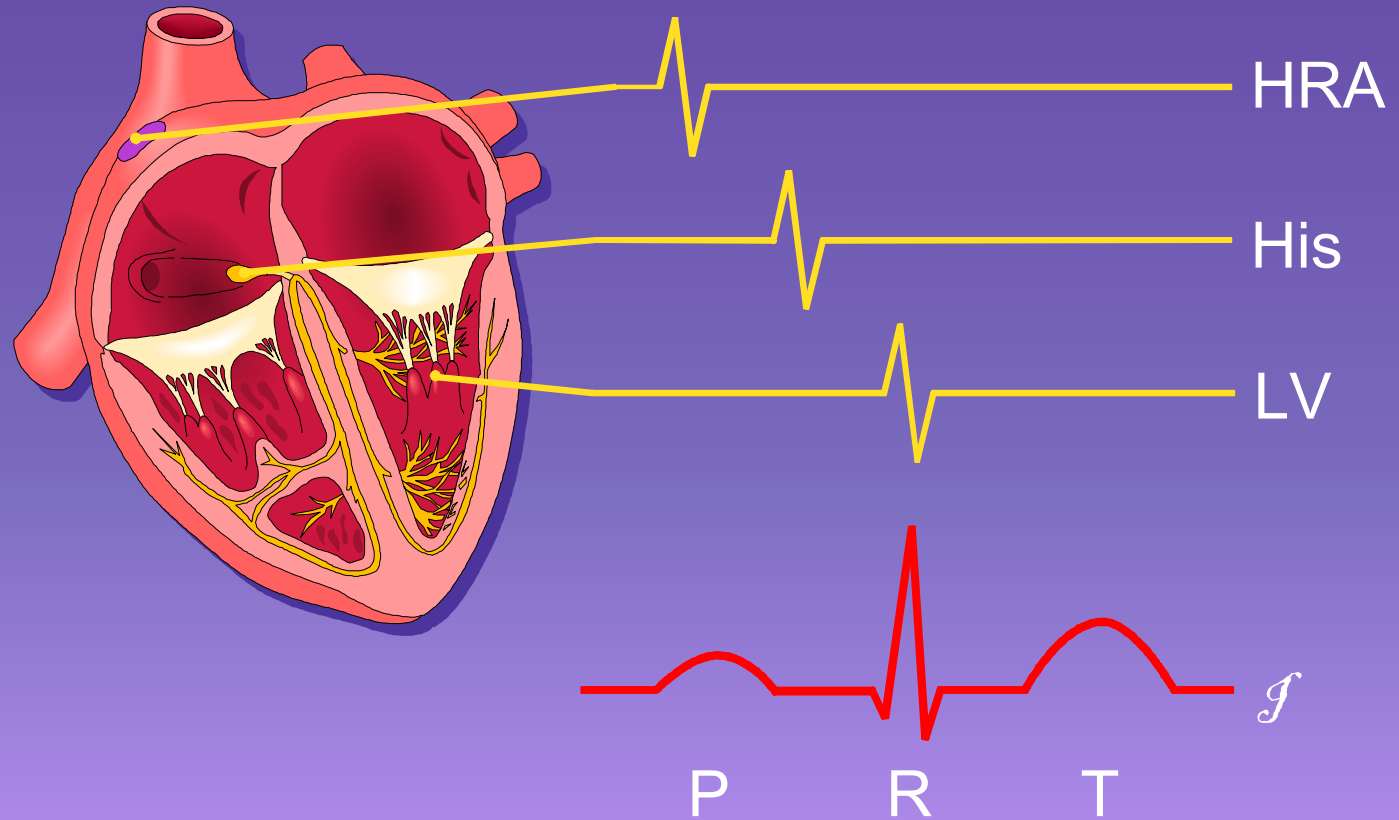
Bipolar signals:
“usefull for timing of
electrical activation”

Basics of EP-study



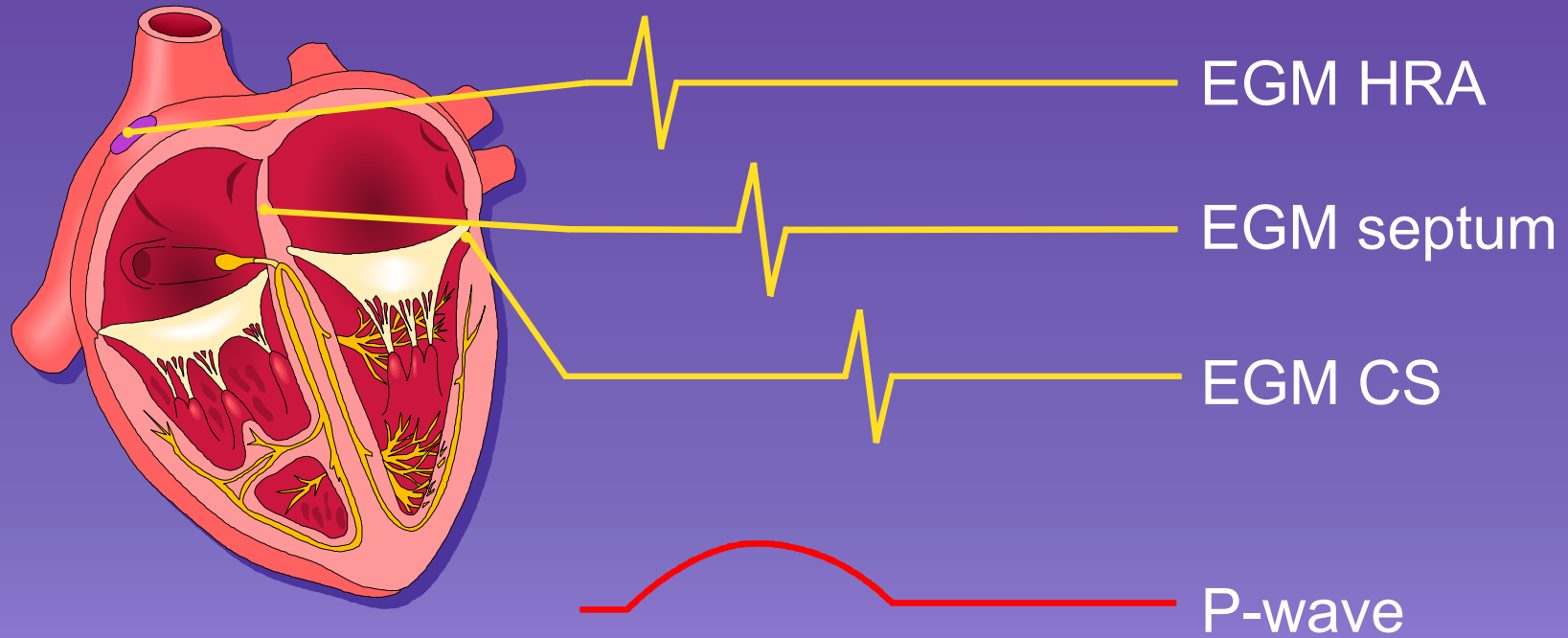
Recordings of electrical activation

Recordings from specific sites



Basics of EP-study

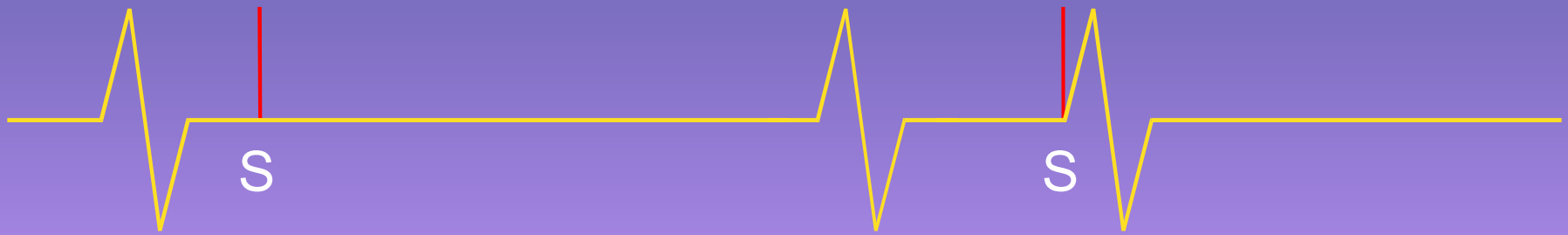
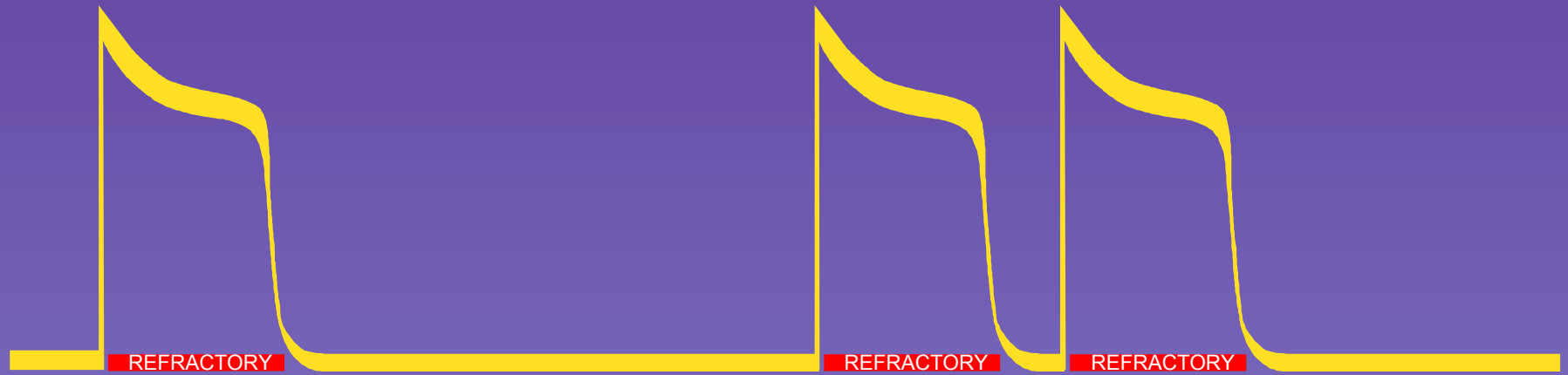
Activitation sequence



Timing relationship of the activation of different sites

Basics of EP-study

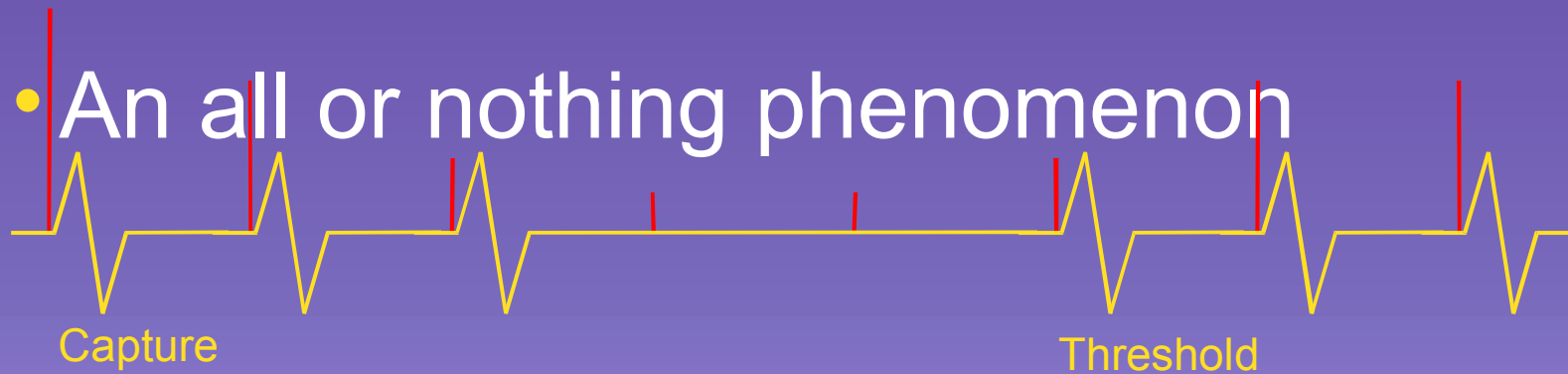
Refractoriness



Stimulation threshold

- **Stimulation threshold** (minimum energy to “activate” the cells in close contact with the electrode)

- **An all or nothing phenomenon**



- Decrease the stimulation output until capture is lost, increase the output until capture is regained
- Multiply the output at threshold with 2 to set the output

BASIC ELECTROPHYSIOLOGICAL STUDY

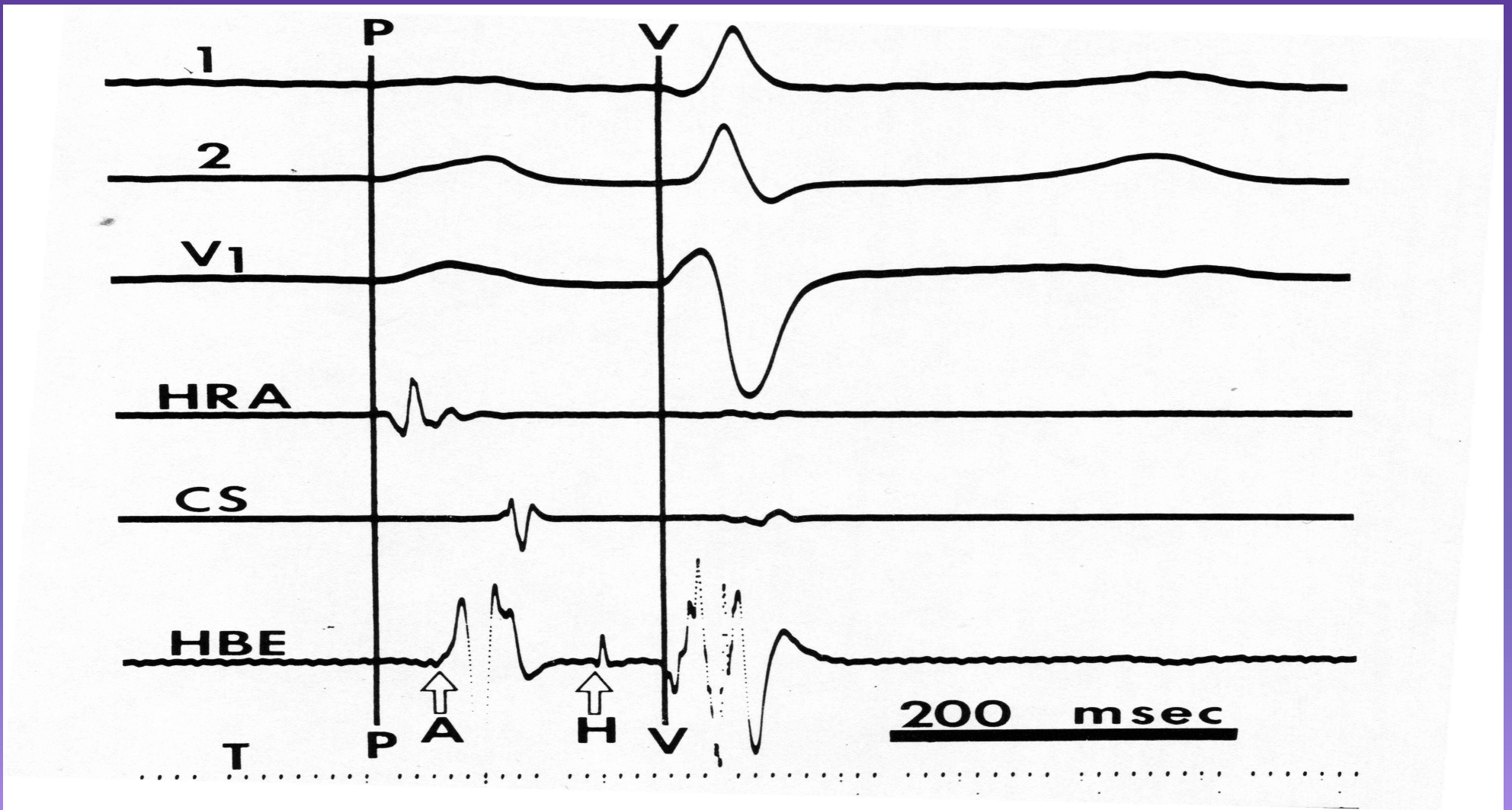
BASIC INTERVALS

SINUS NODE FUNCTION: SNRT
SACT
SN-EGM

ANTEGRADE PROPERTIES: INCREMENTAL ATRIAL PACING
ATRIAL EXTRASTIMULI TESTING

RETROGRADE PROPERTIES: INCREMENTAL VENT. PACING
VENT. EXTRASTIMULI TESTING

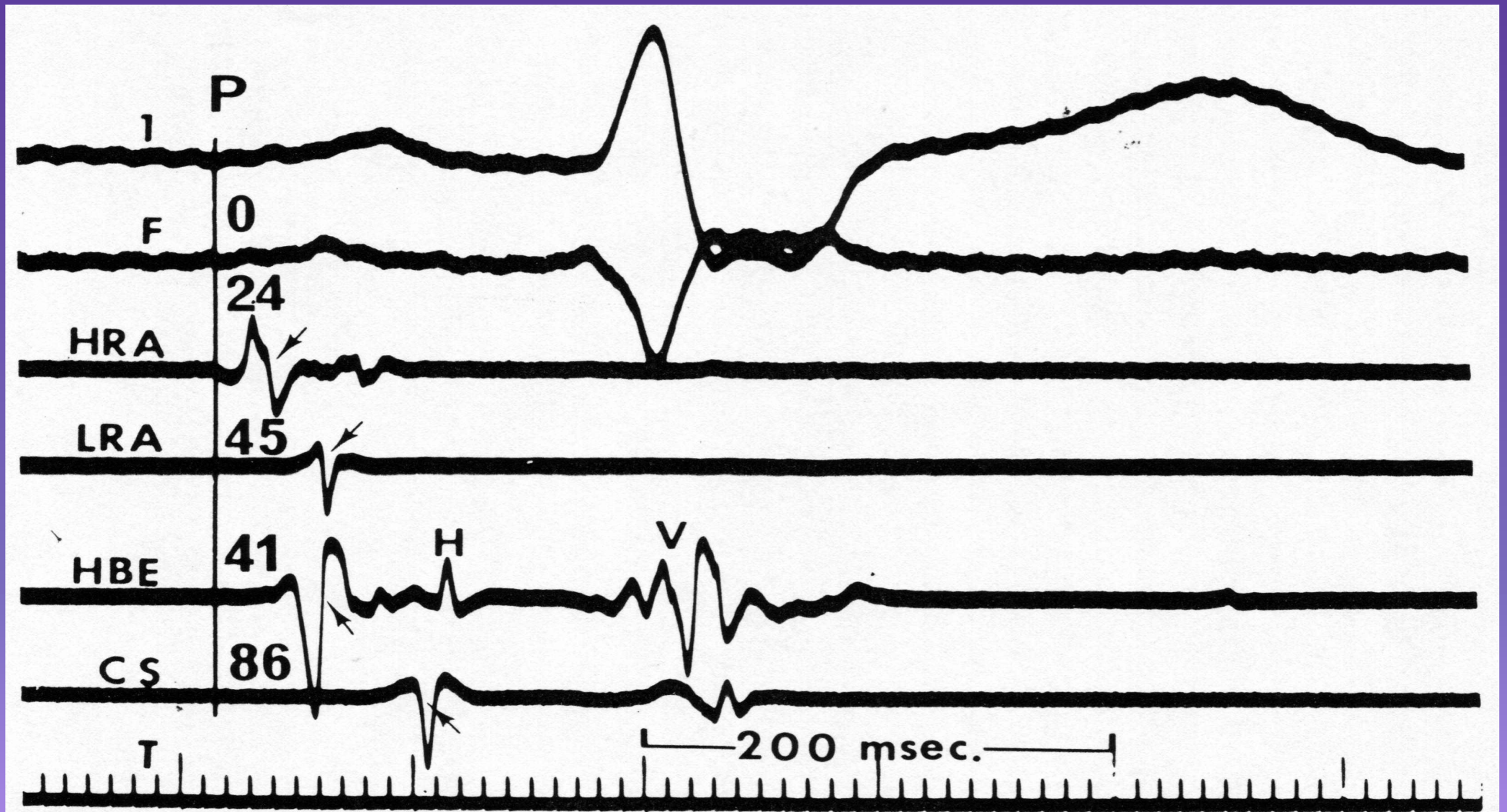
INDUCED TACHYCARDIA MECHANISM AND
CHARACTERISTICS



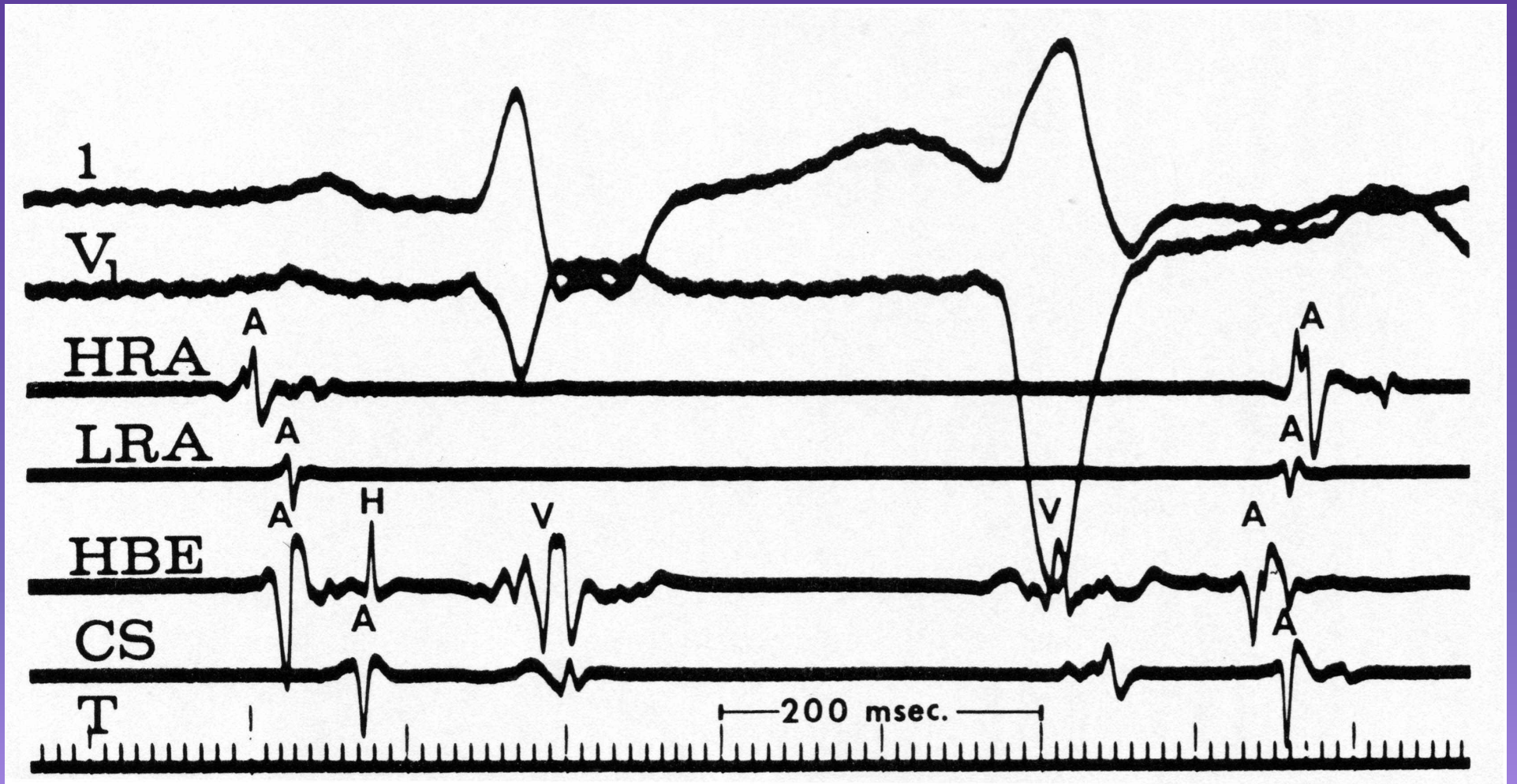
Basics of EP-study

Table 3–1. Normal Conduction Intervals in Adults

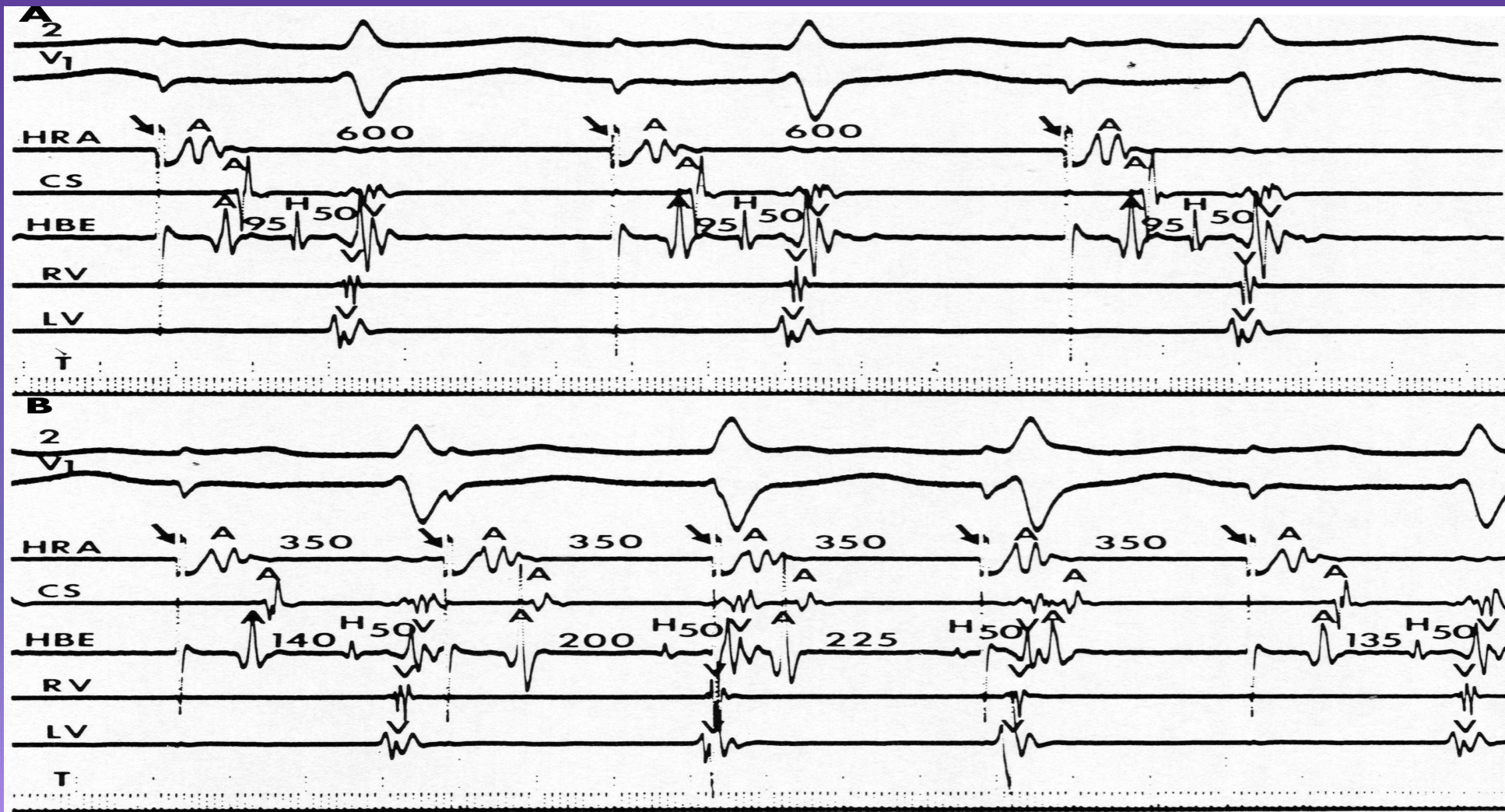
<i>Laboratory</i>	<i>P–A</i>	<i>A–H</i>	<i>H–V</i>	<i>H</i>
Narula ^{2,5}	25–60	50–120	35–45	25
Damato ^{1,3,18,28}	24–45	60–140	30–55	10–15
Castellanos ⁶	20–50	50–120	25–55	
Schuilenburg ^{23,24}		85–150	35–55	
Peuch ^{4,14}	30–55	45–100	35–55	
Bekheit ^{25,26}	10–50	50–125	35–45	15–25
Rosen ²⁷	9–45	54–130	31–55	
Author		60–125	35–55	10–25



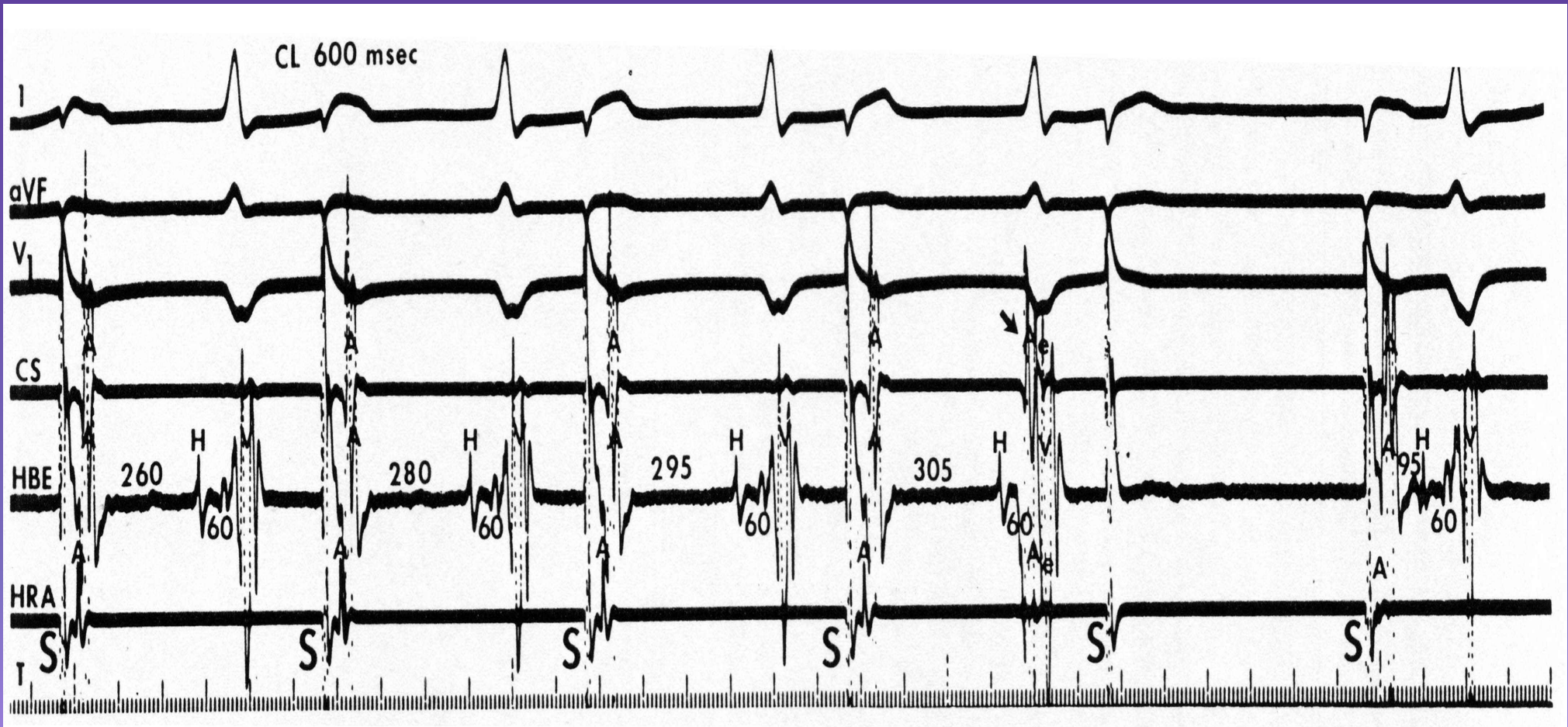
Basics of EP-study



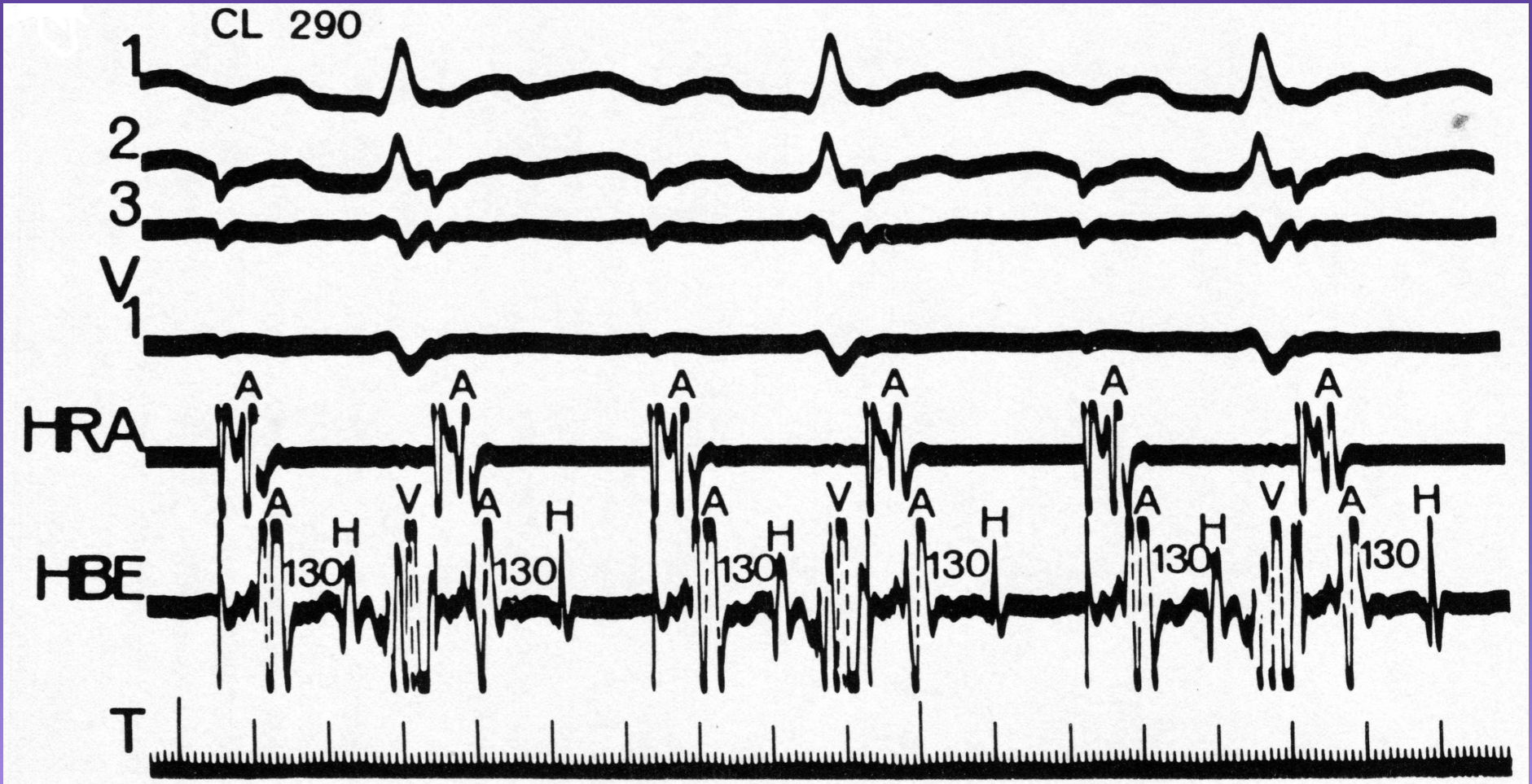
Basics of EP-study



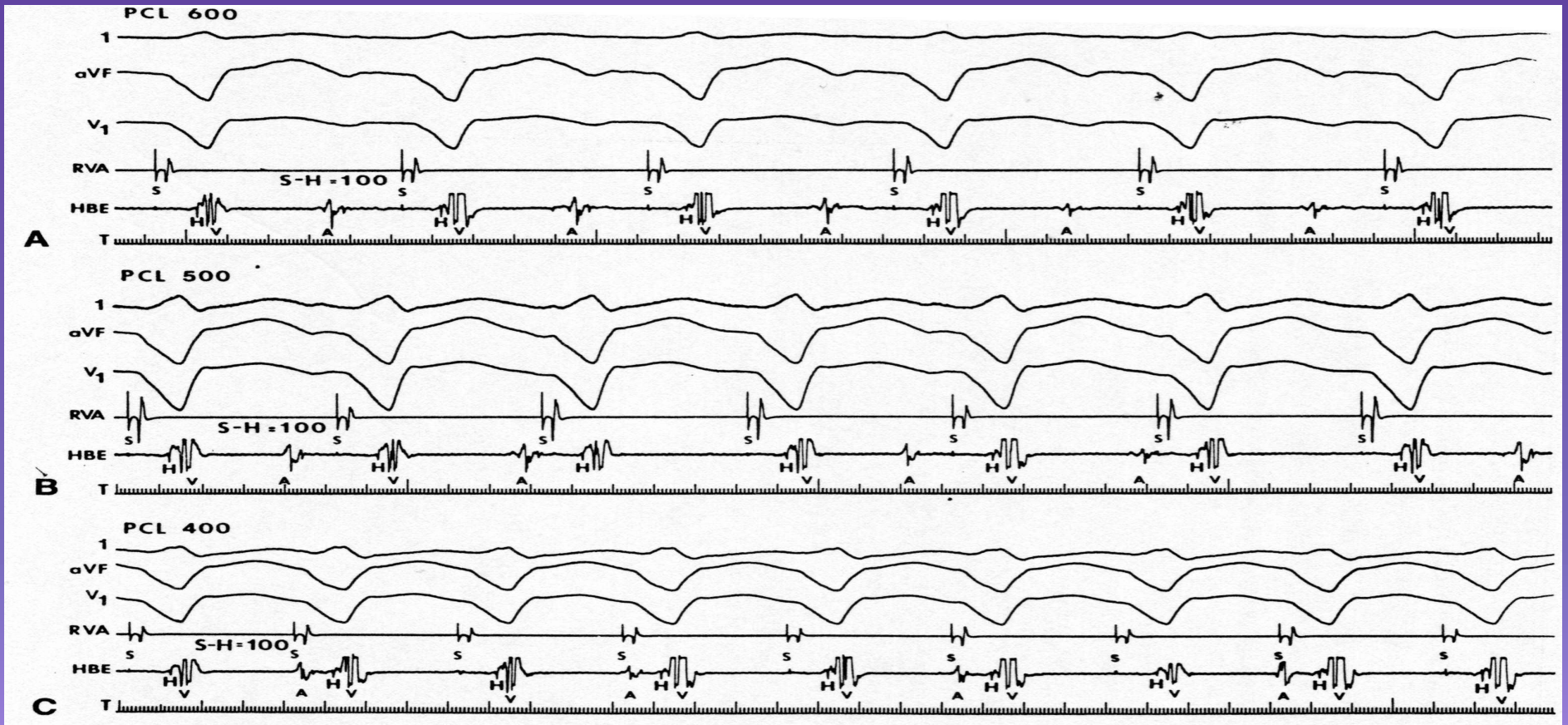
Basics of EP-study



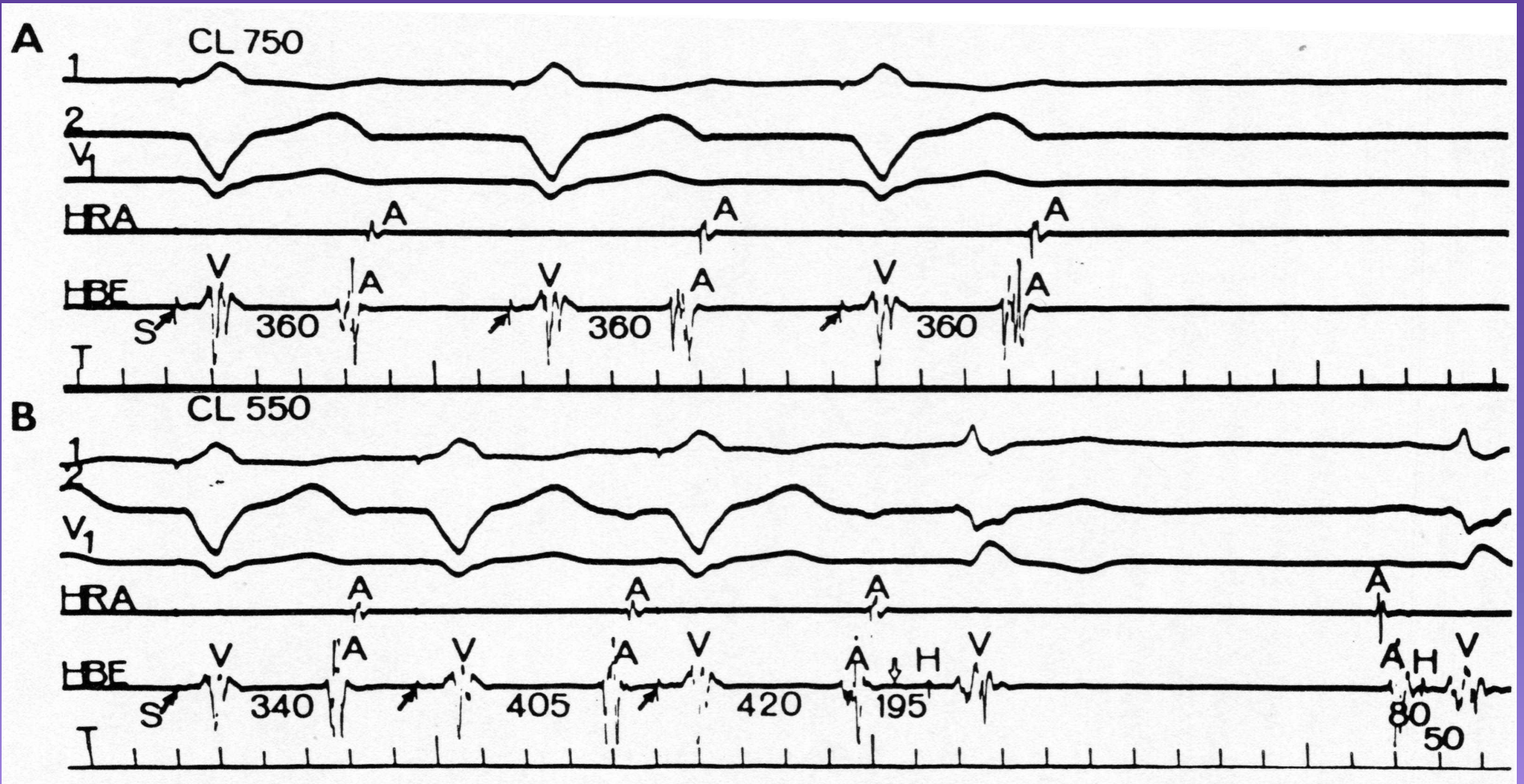
Basics of EP-study



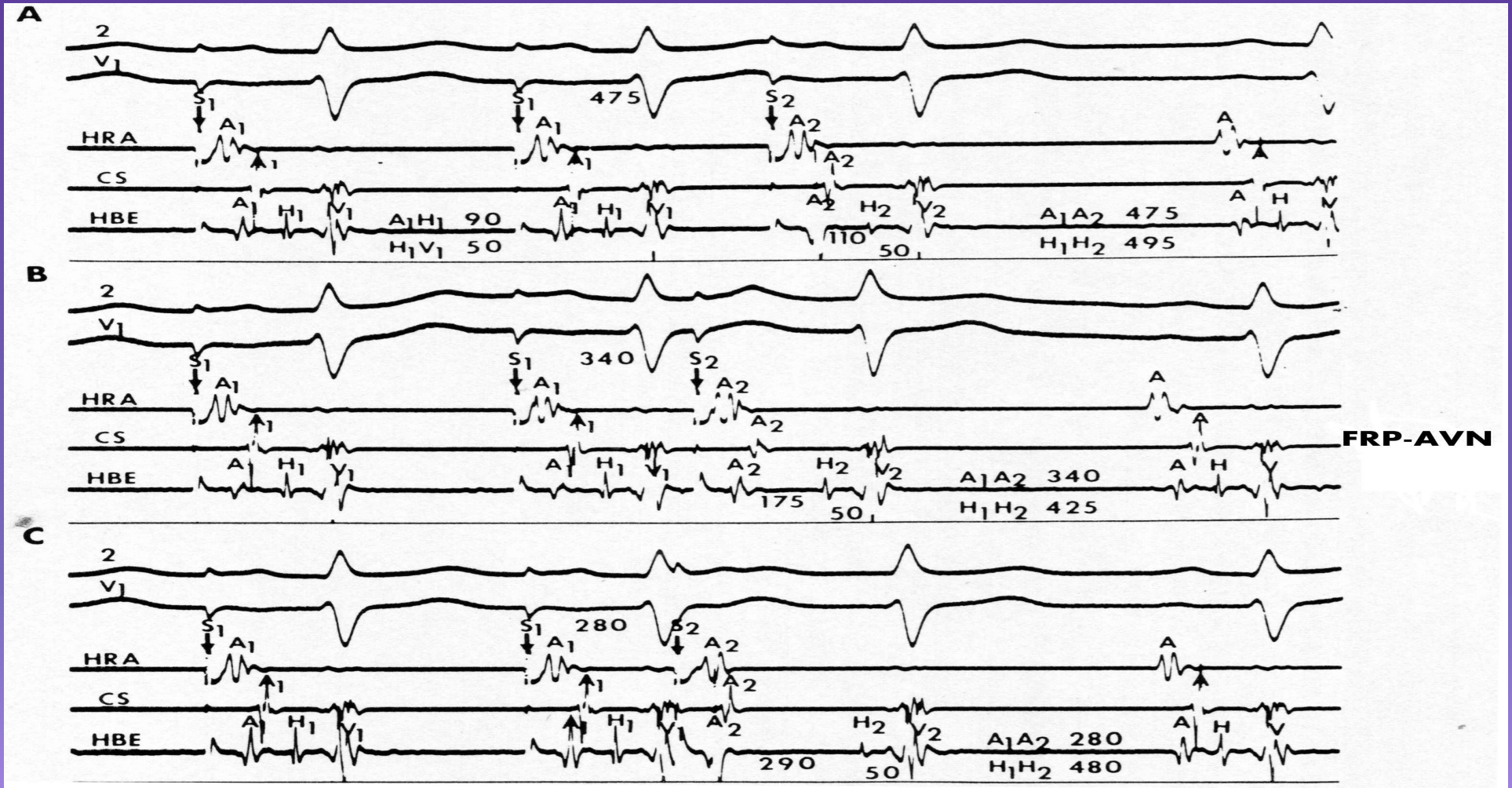
Basics of EP-study



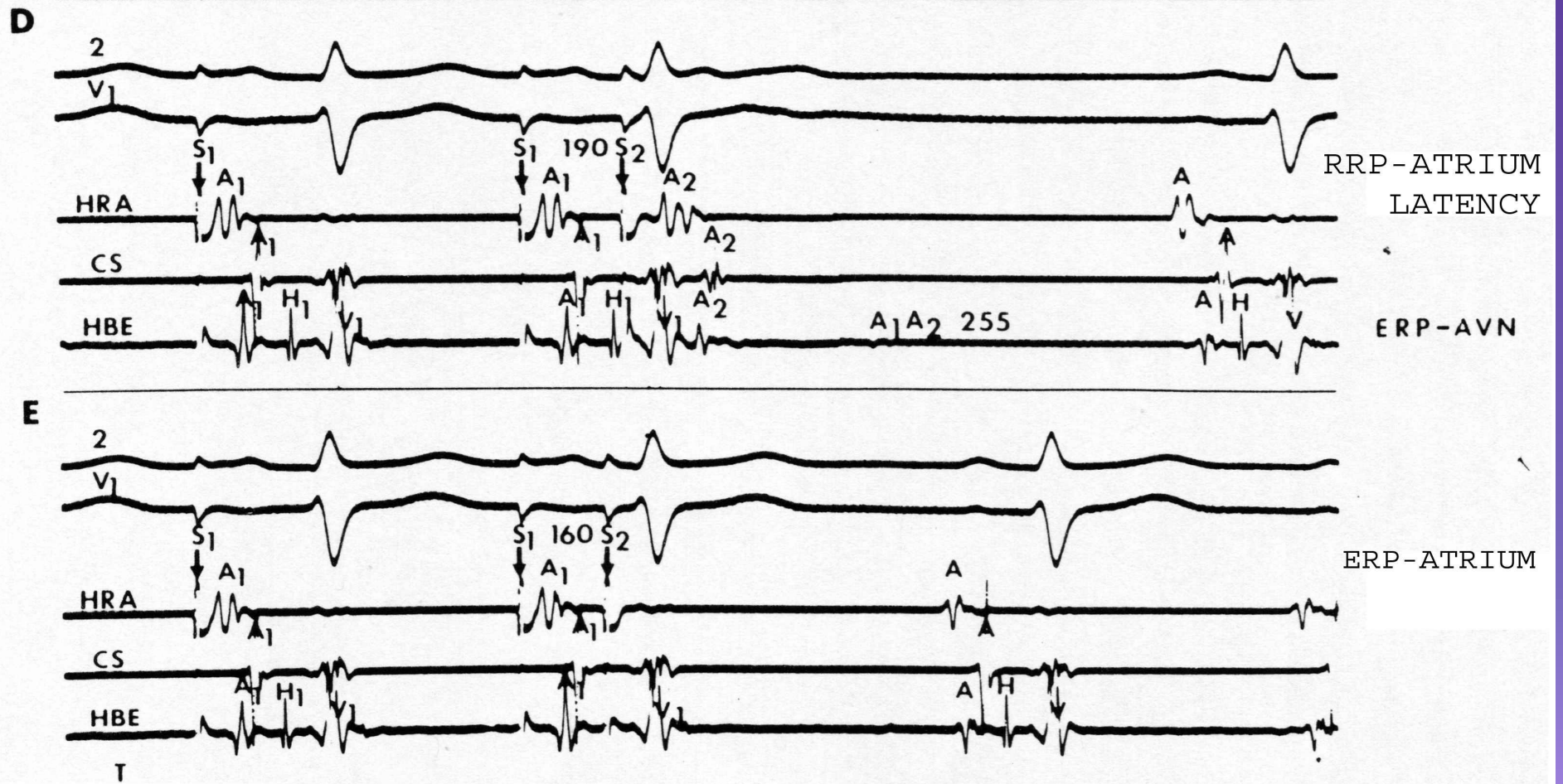
Basics of EP-study



Basics of EP-study



Basics of EP-study



Basics of EP-study

Atrial refractory period

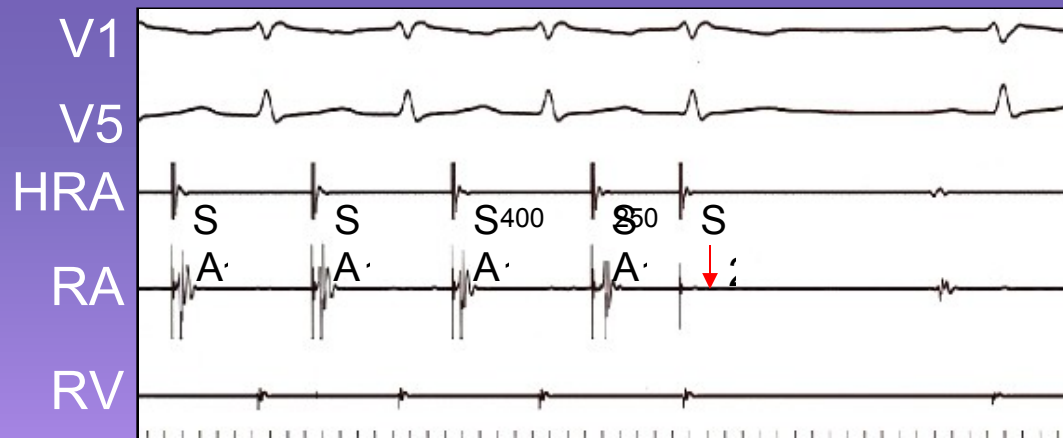
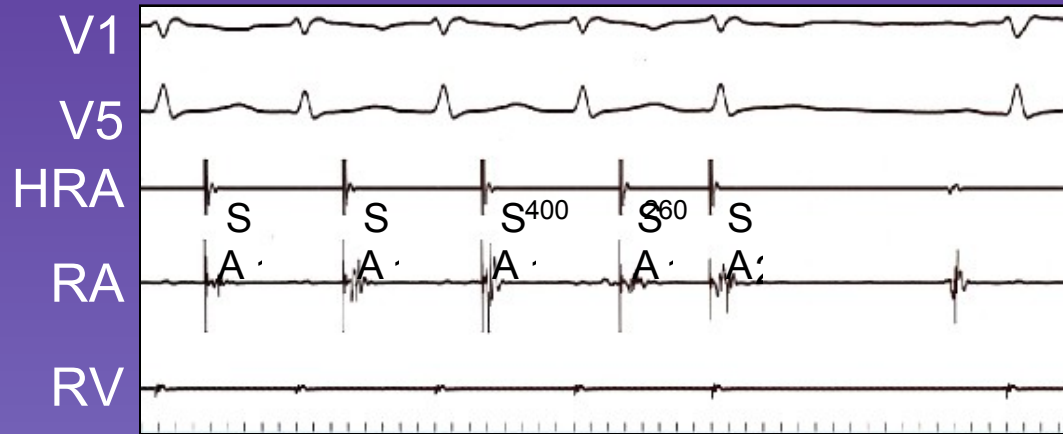
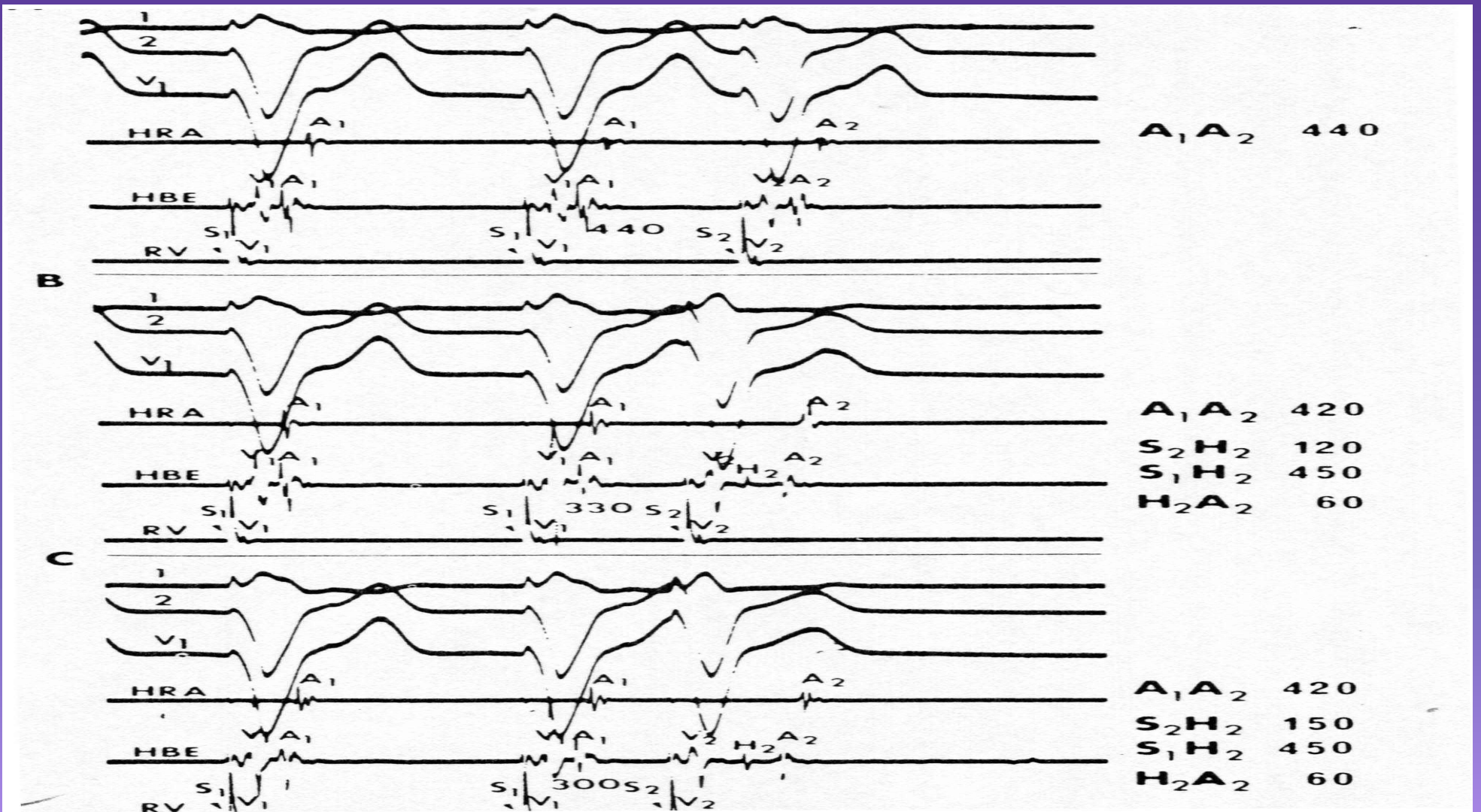
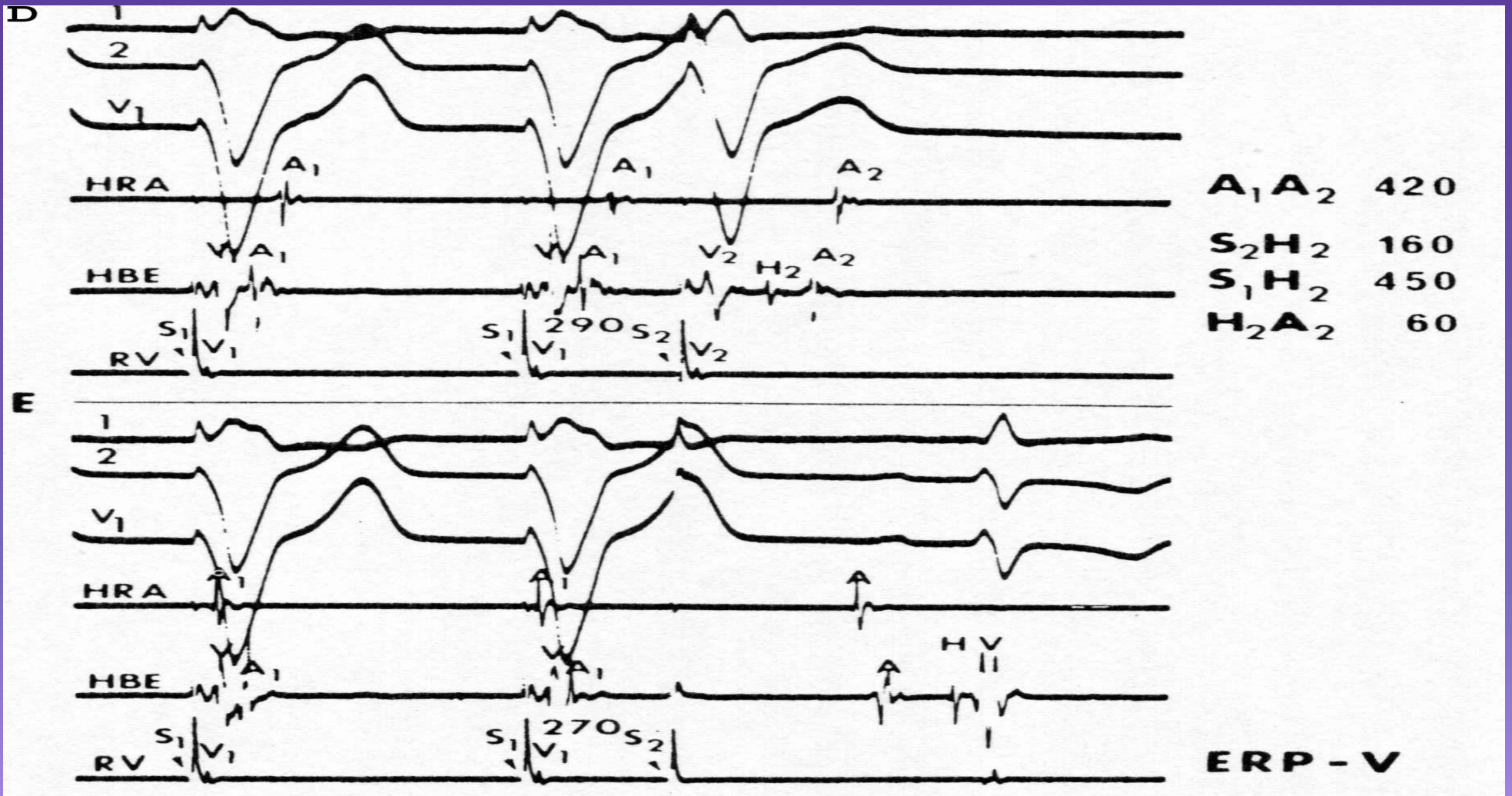


Table 3-5. Normal Refractory Periods in Adults

<i>Laboratory</i>	<i>ERP Atrium</i>	<i>ERP AVN</i>	<i>FRP AVN</i>	<i>ERP HPS</i>	<i>ERP V</i>
Denes ⁷⁸	150-360	250-365	350-495	—	—
Akhtar ^{66*}	230-330	280-430	320-680	340-430	190-290
Schuilenburg ²³	—	230-390	330-500	—	—
Author	170-300	230-425	330-525	330-450	170-290

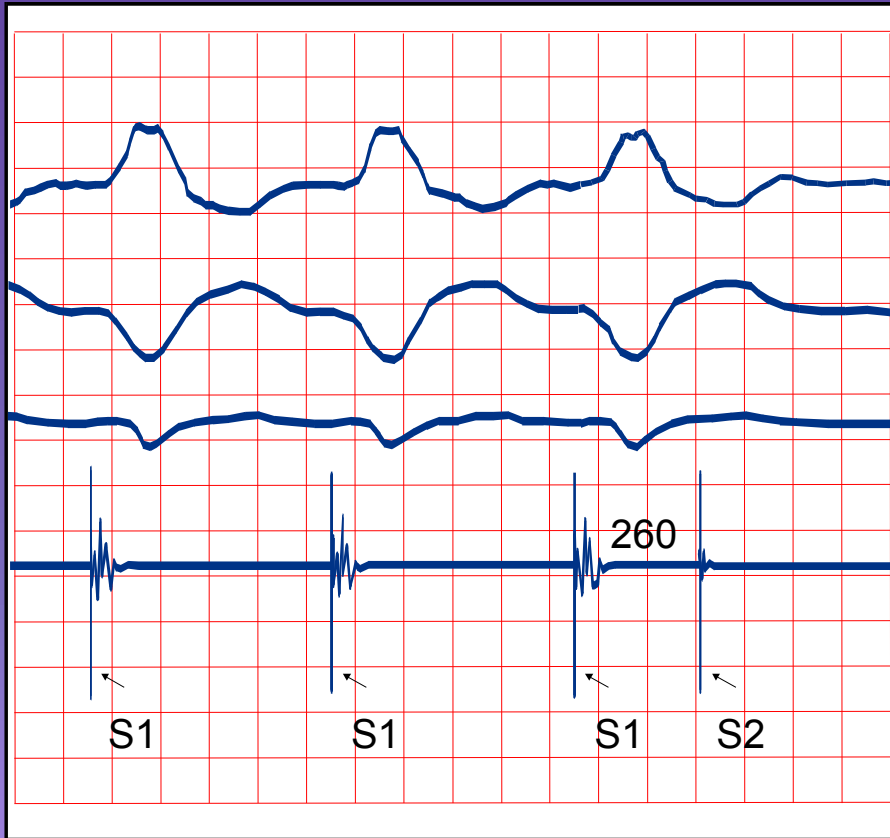


Basics of EP-study

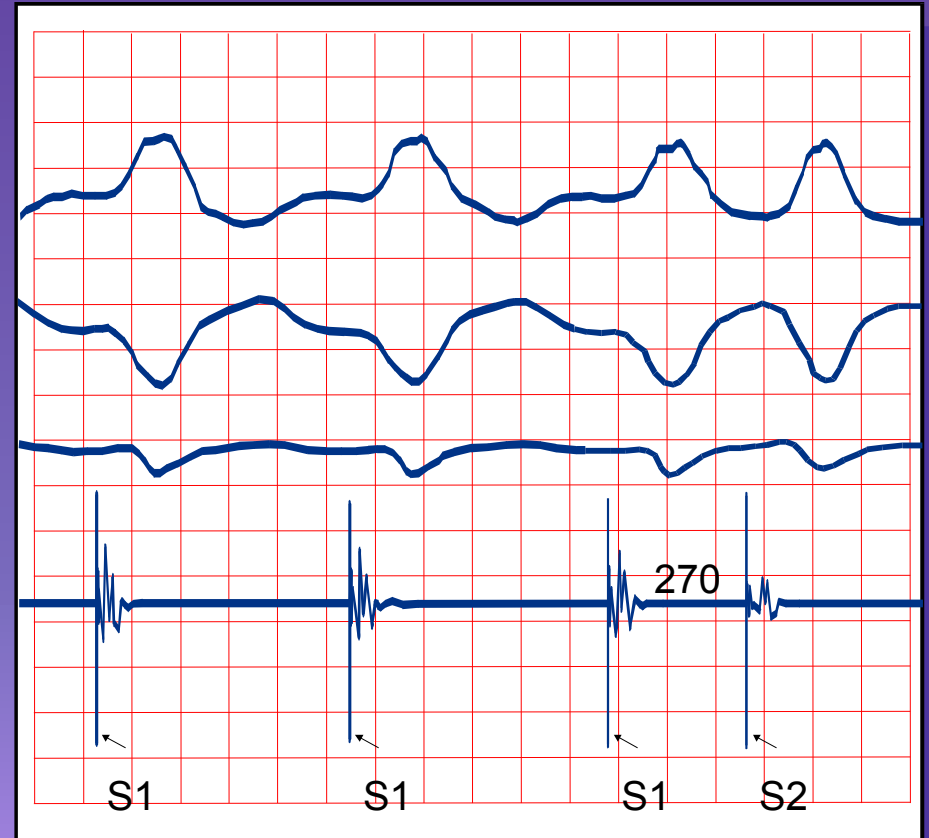


Basics of EP-study

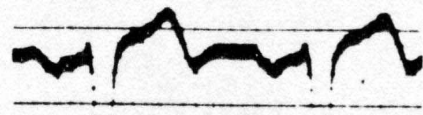
Ventricular refractory period



No capture



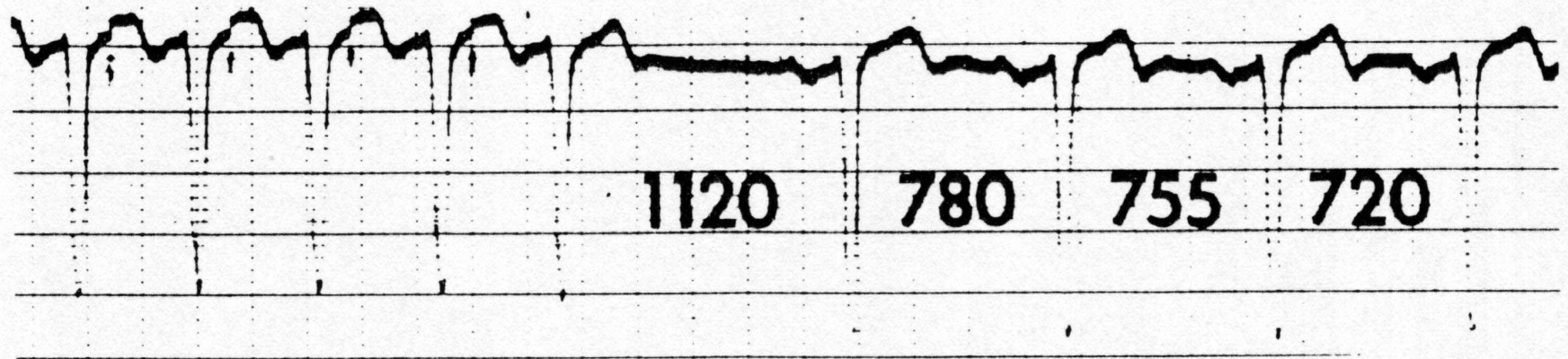
Capture



720

BCL 400 msec

V₁



1120

780

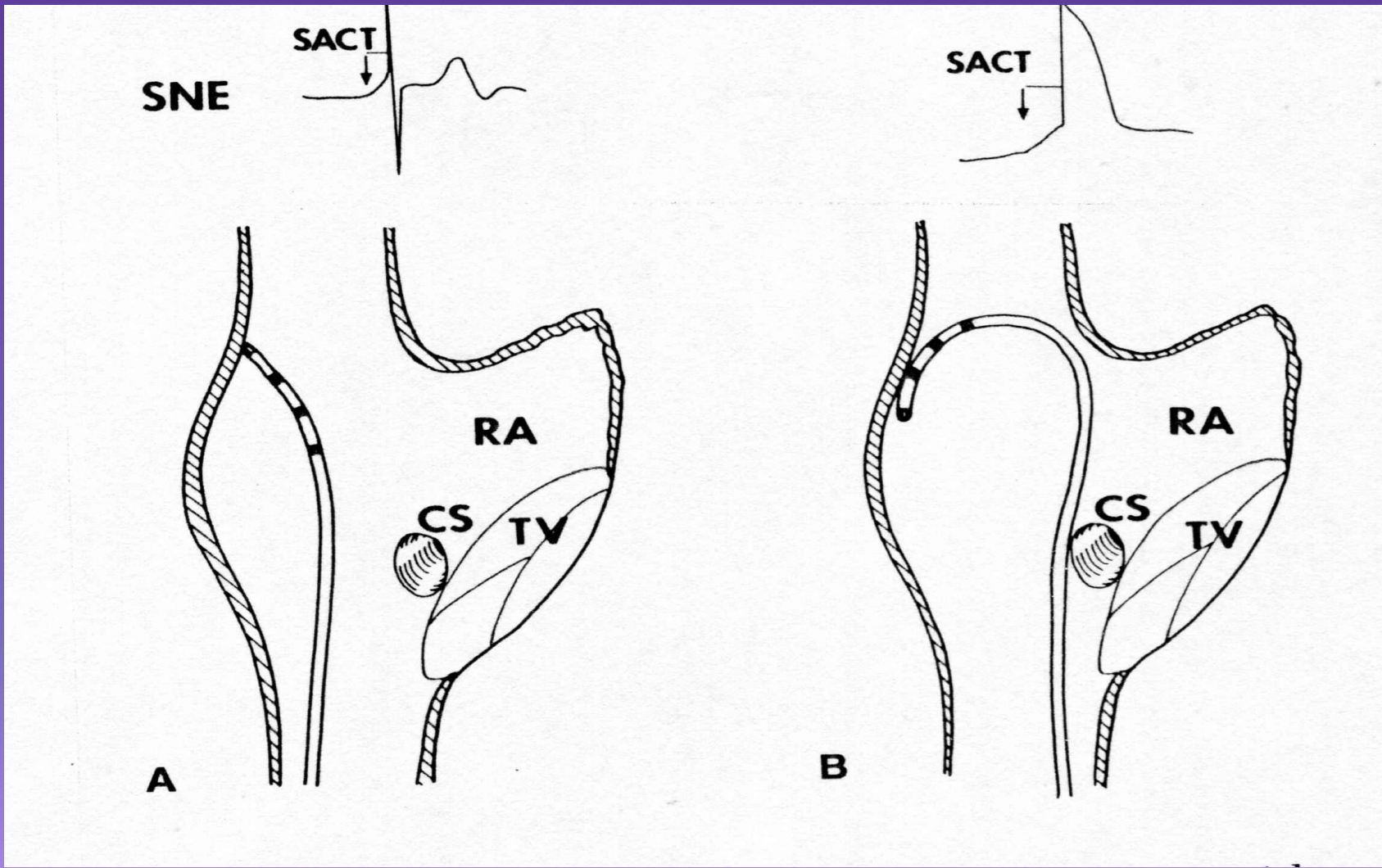
755

720

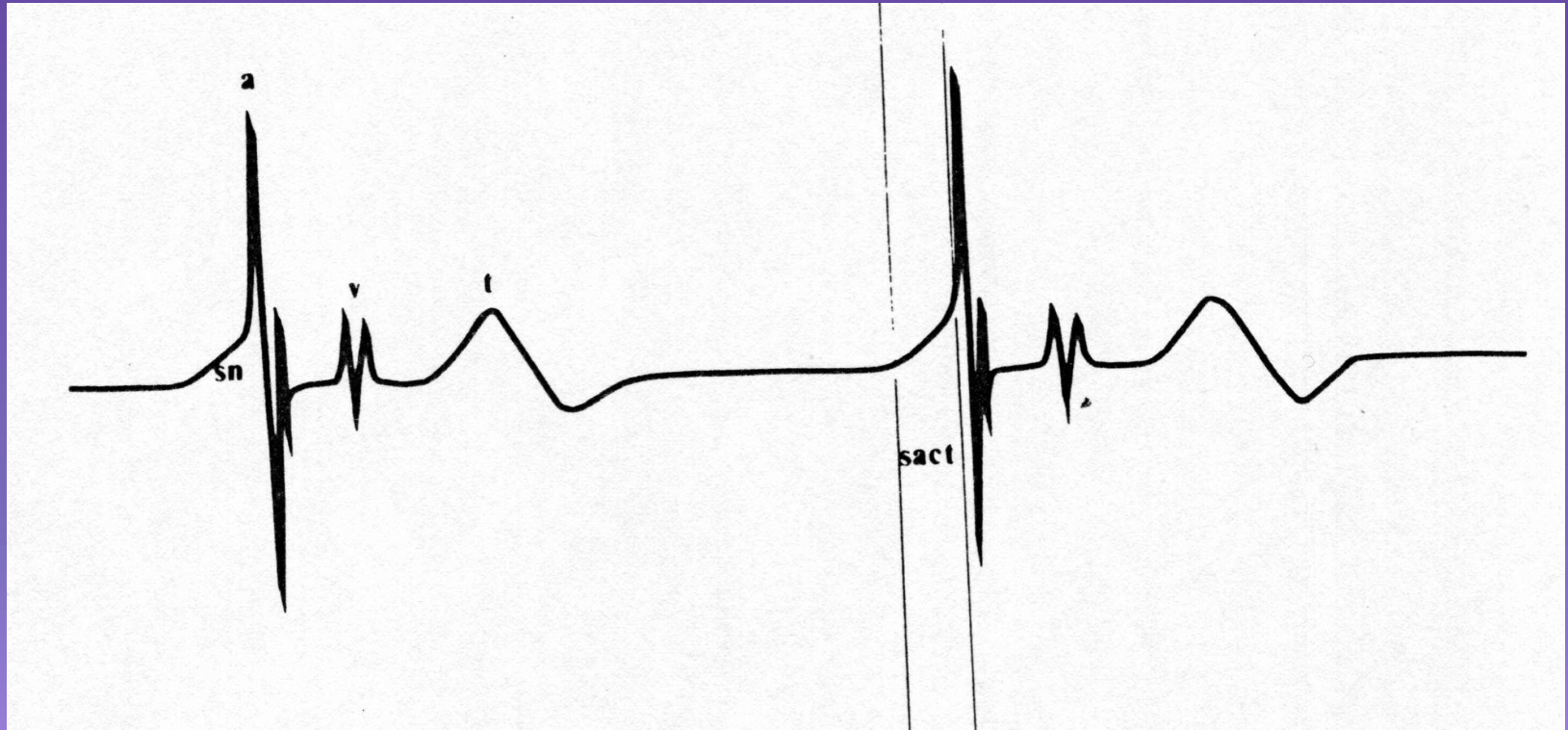
Table 4–2. Measurements of Sinus Recovery Time (SRT) Following Overdrive Suppression

<i>Laboratory</i>	<i>SRT</i> (msec)	<i>CSRT</i> (msec)	$\frac{\text{SRT}}{\text{SCL\%}}$	<i>TRT</i>
Narula ⁷⁰		<525		5 or 6 beats
Kulbertus ⁷¹	<1600	<680		
Mandel ⁷	<1.3 (SCL) + 101	.	<130%	
Rosen ¹⁰	<1400			
Delius ⁷²	<1400	<525		3.8 sec
Breithardt ³⁰	<1400	<508		
Alboni ^{40,41}		<354		
Author		<550	<150%	<5 sec, 4 to 6 beats

CSRT = corrected sinus node recovery time; SCL = sinus cycle length; SRT = sinus node recovery time; TRT = total recovery time.

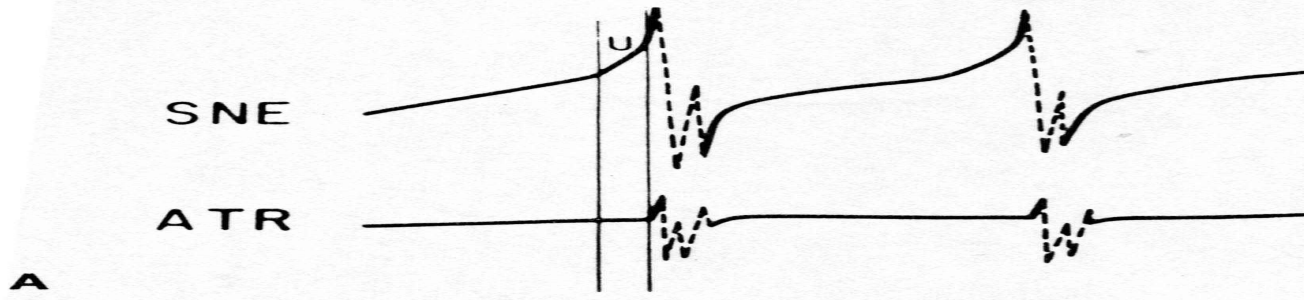


Basics of EP-study

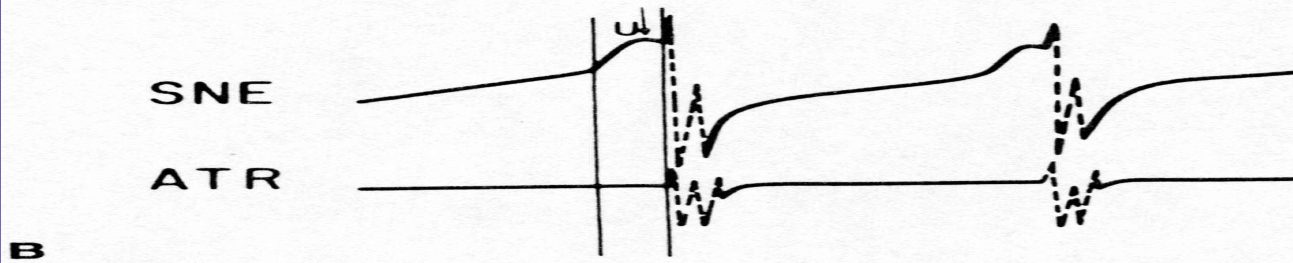


Basics of EP-study

NORMAL SACT



PROLONGED SACT



SA EXIT BLOCK

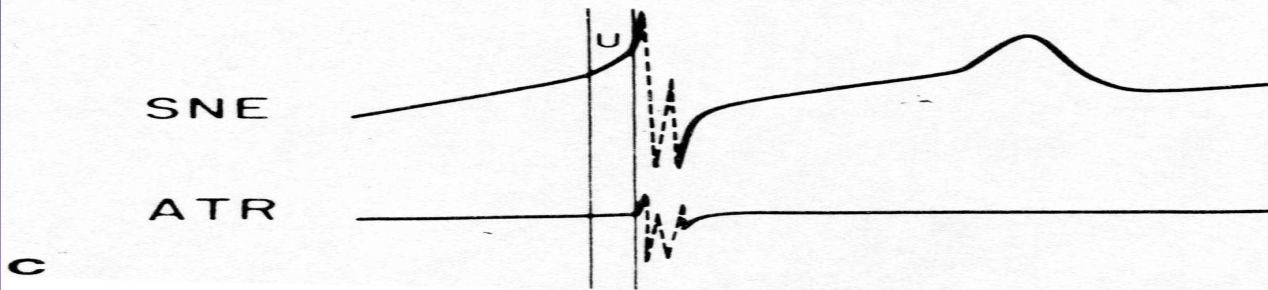
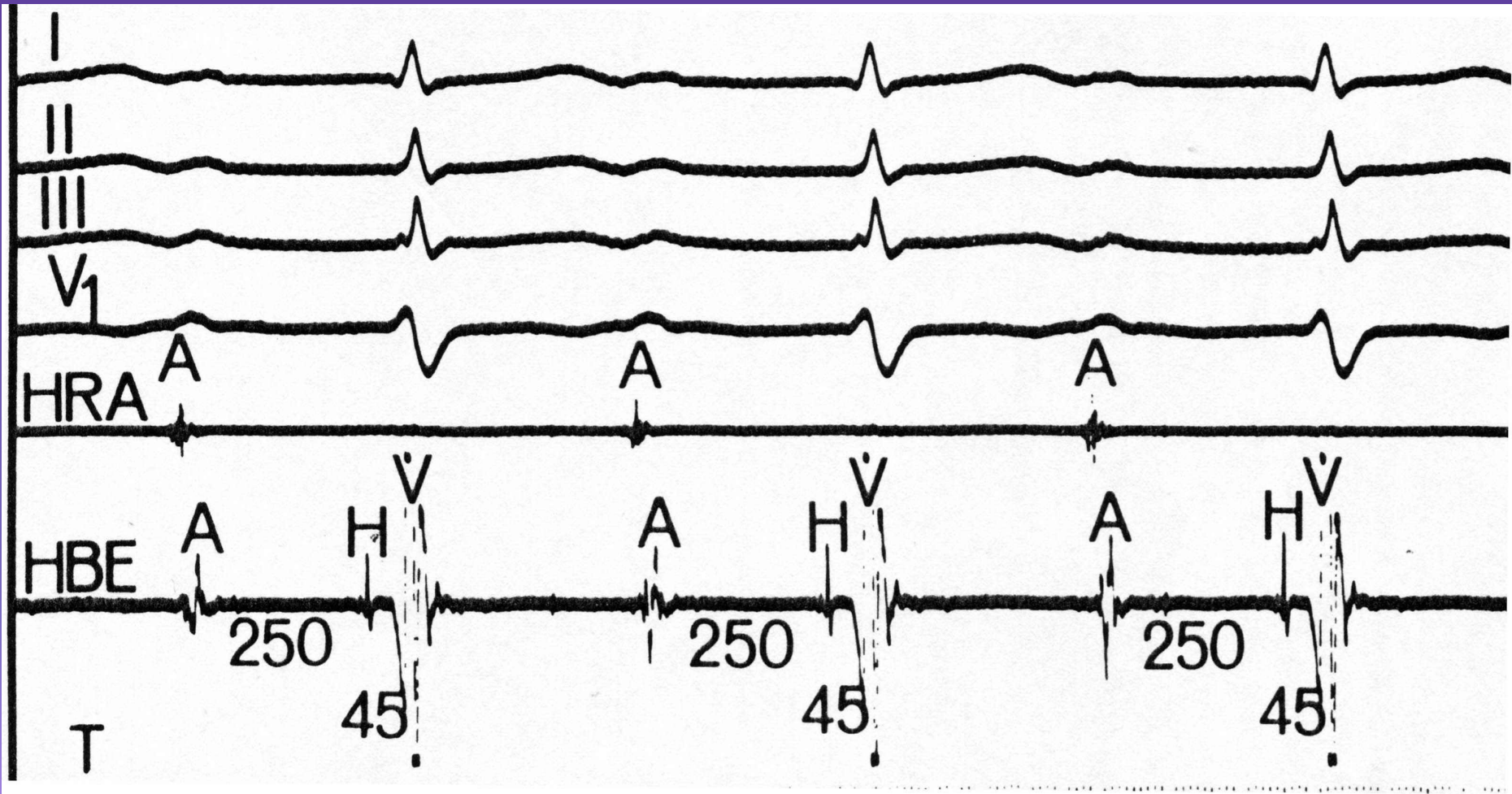


Table 4–1. Sinoatrial Conduction Time (SACT)

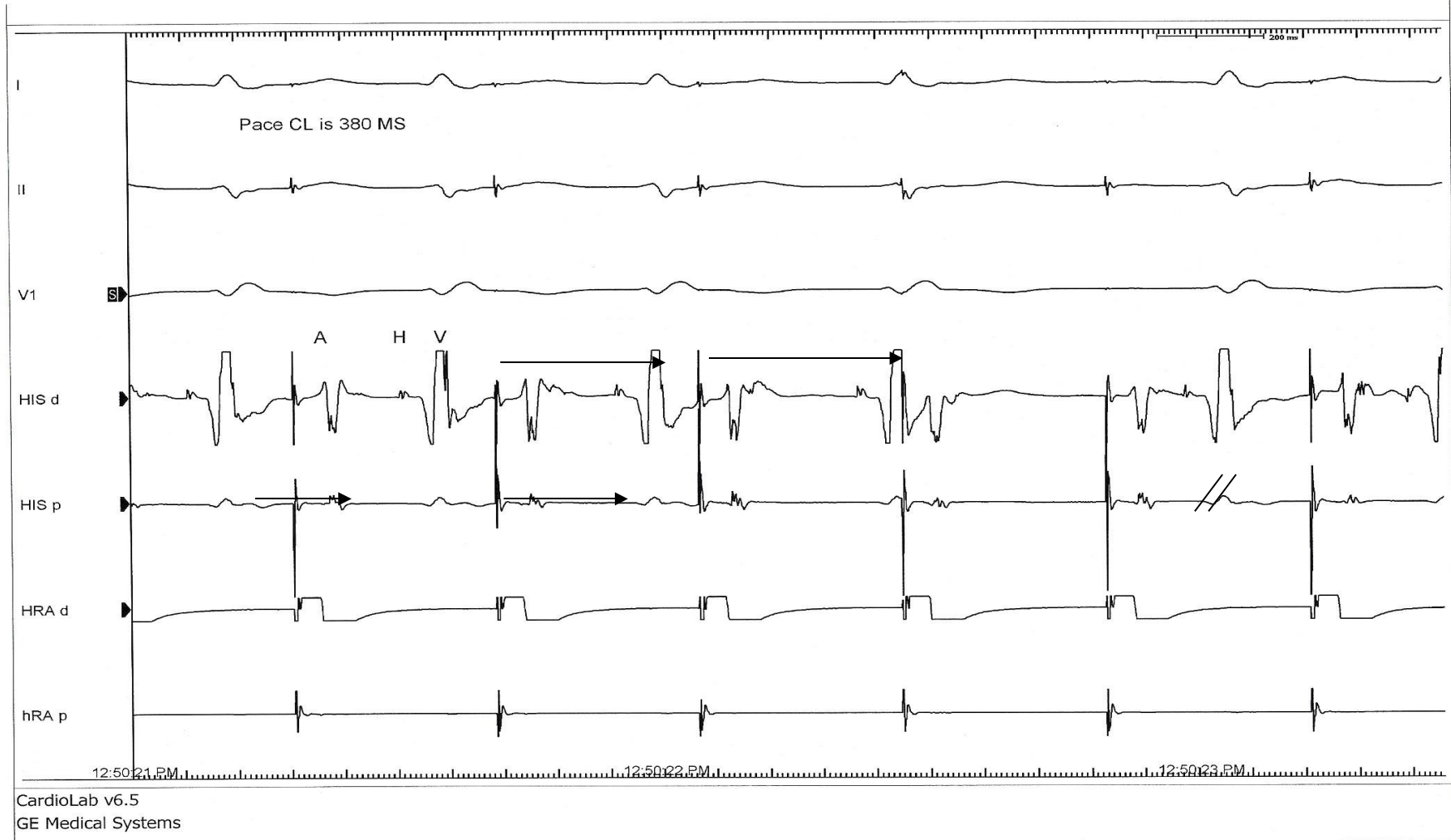
<i>Laboratory</i>	<i>SACT (msec)</i>
Strauss ²⁵	68–156
Masini ²⁷	40–94
Mandel ^{9,38}	41–107
Breithardt ^{28,30}	48–112
Dhingra ²⁶	40–153
Steinbeck ³⁹	40–70
Alboni ^{40,41}	46–96
Gomes ⁴²	59–111
Authors	45–125



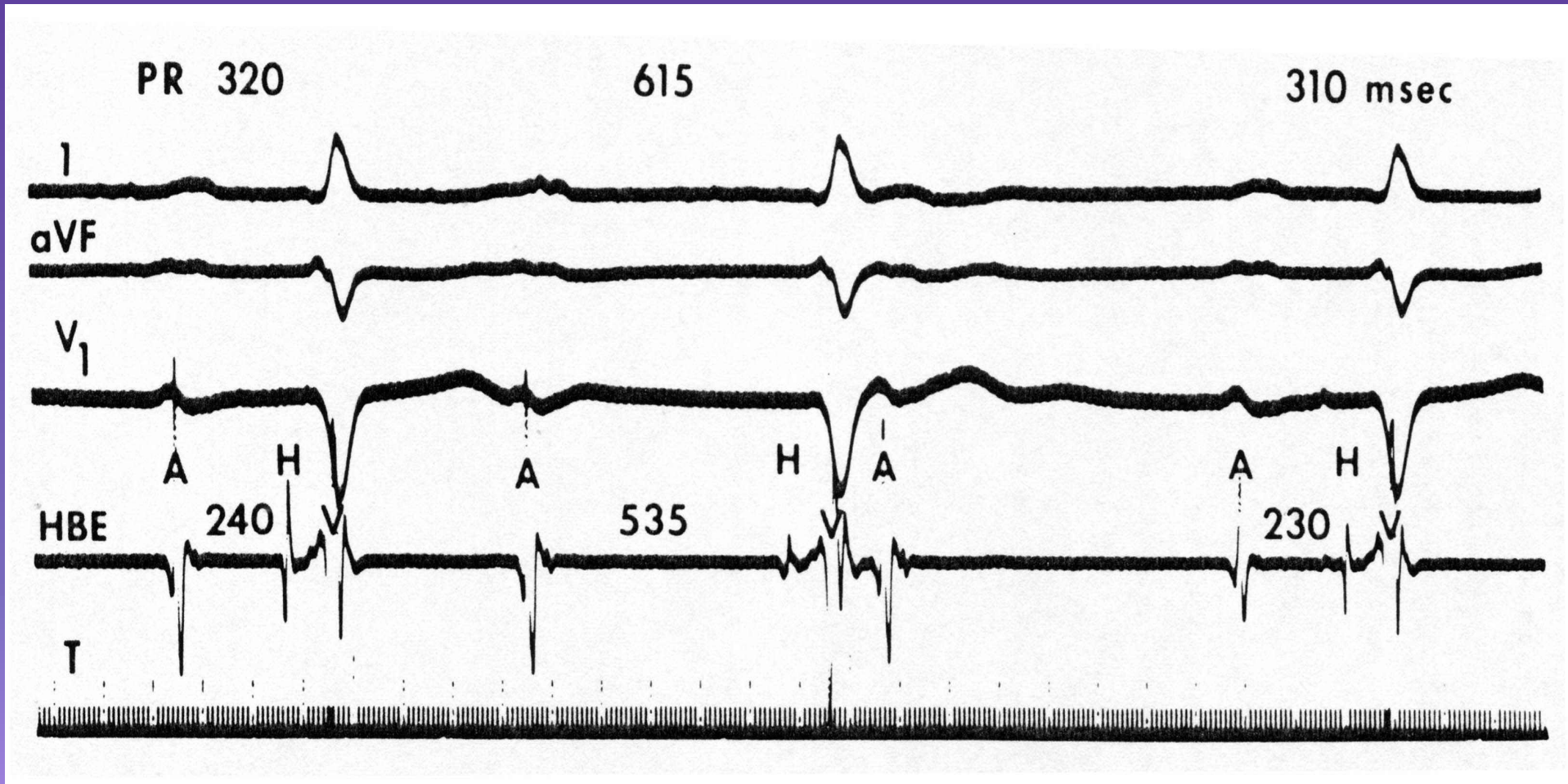
Basics of EP-study

Block in AV Node

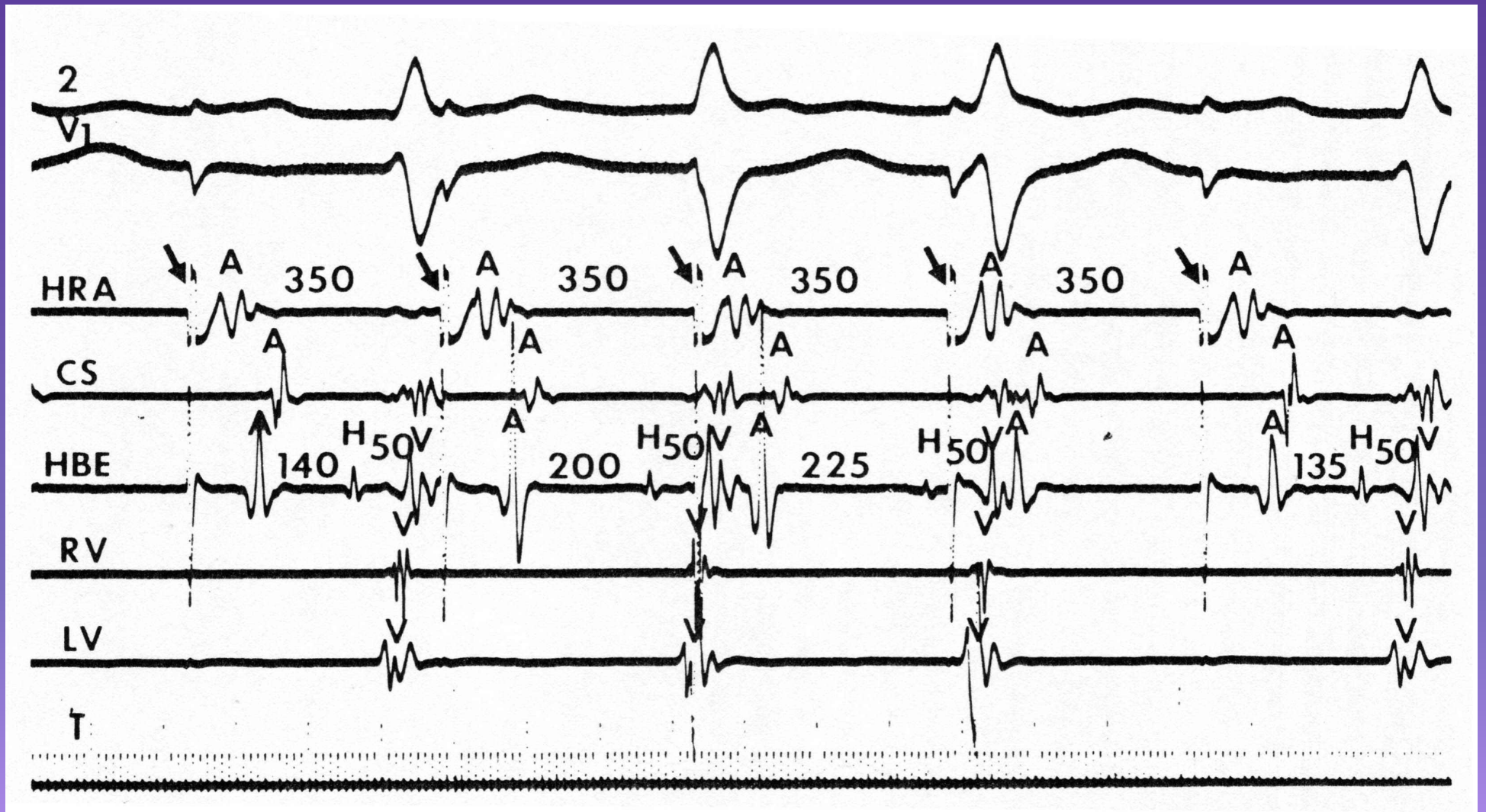
Belinson



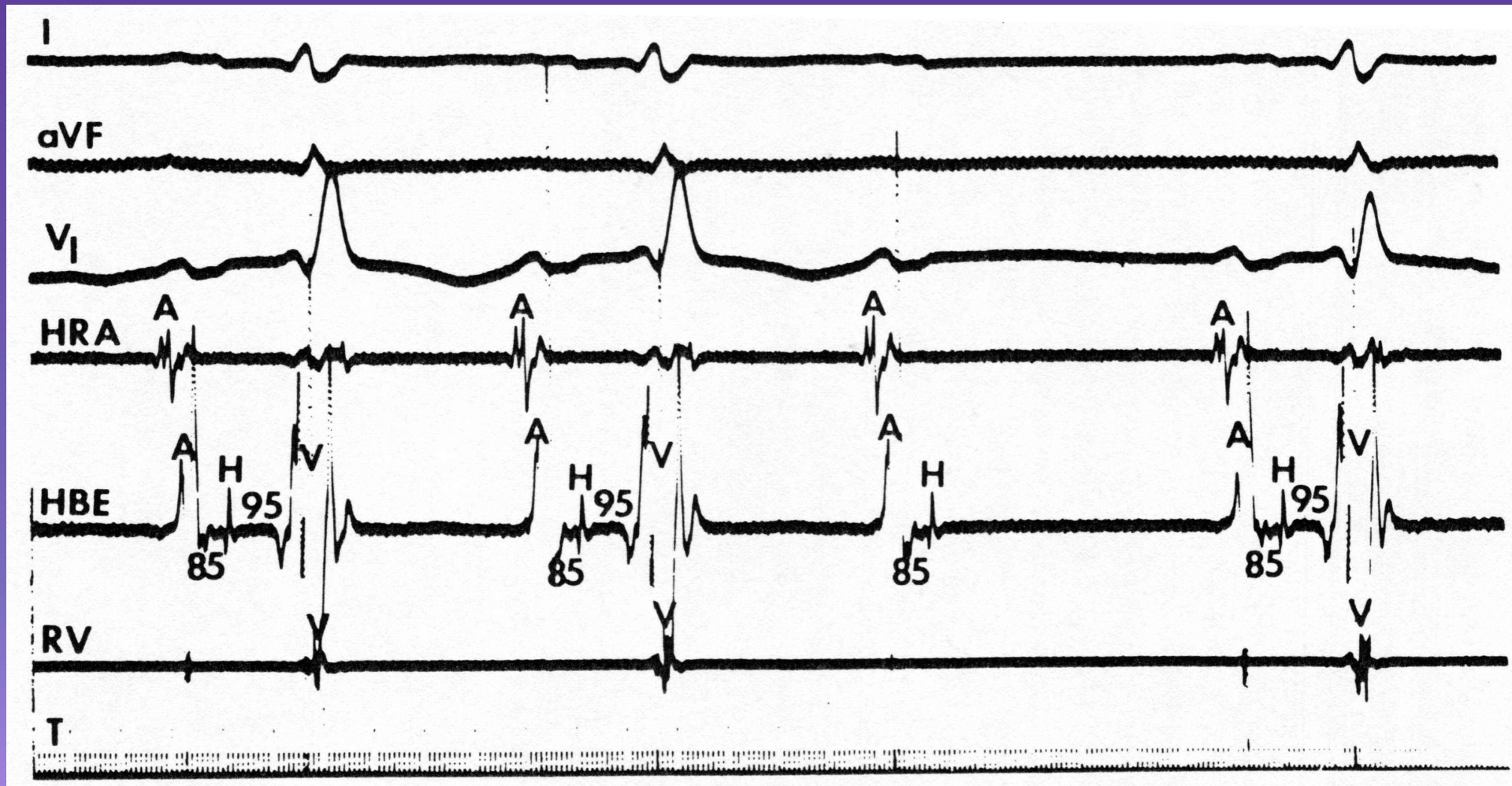
Basics of EP-study



Basics of EP-study

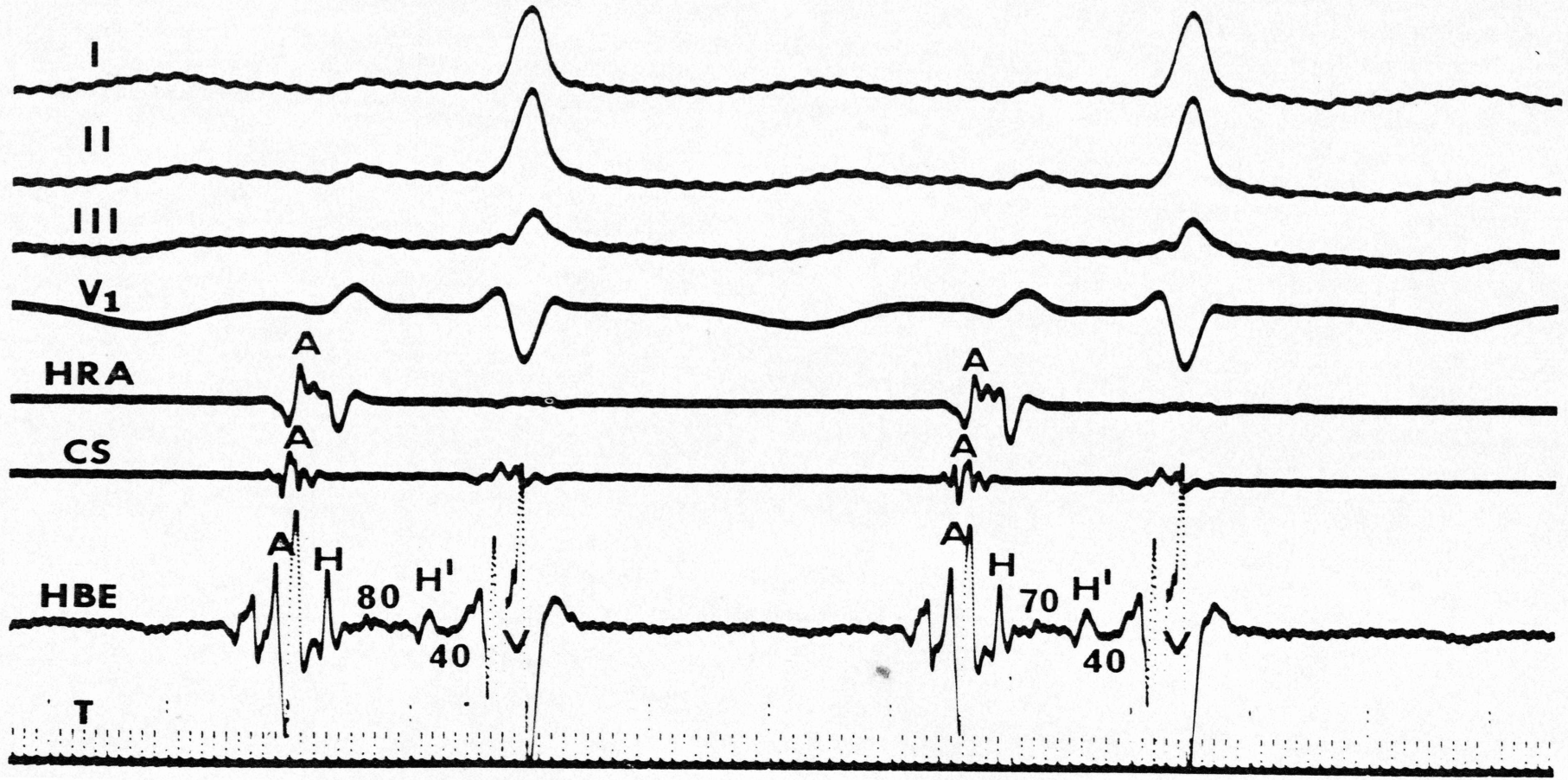


Basics of EP-study



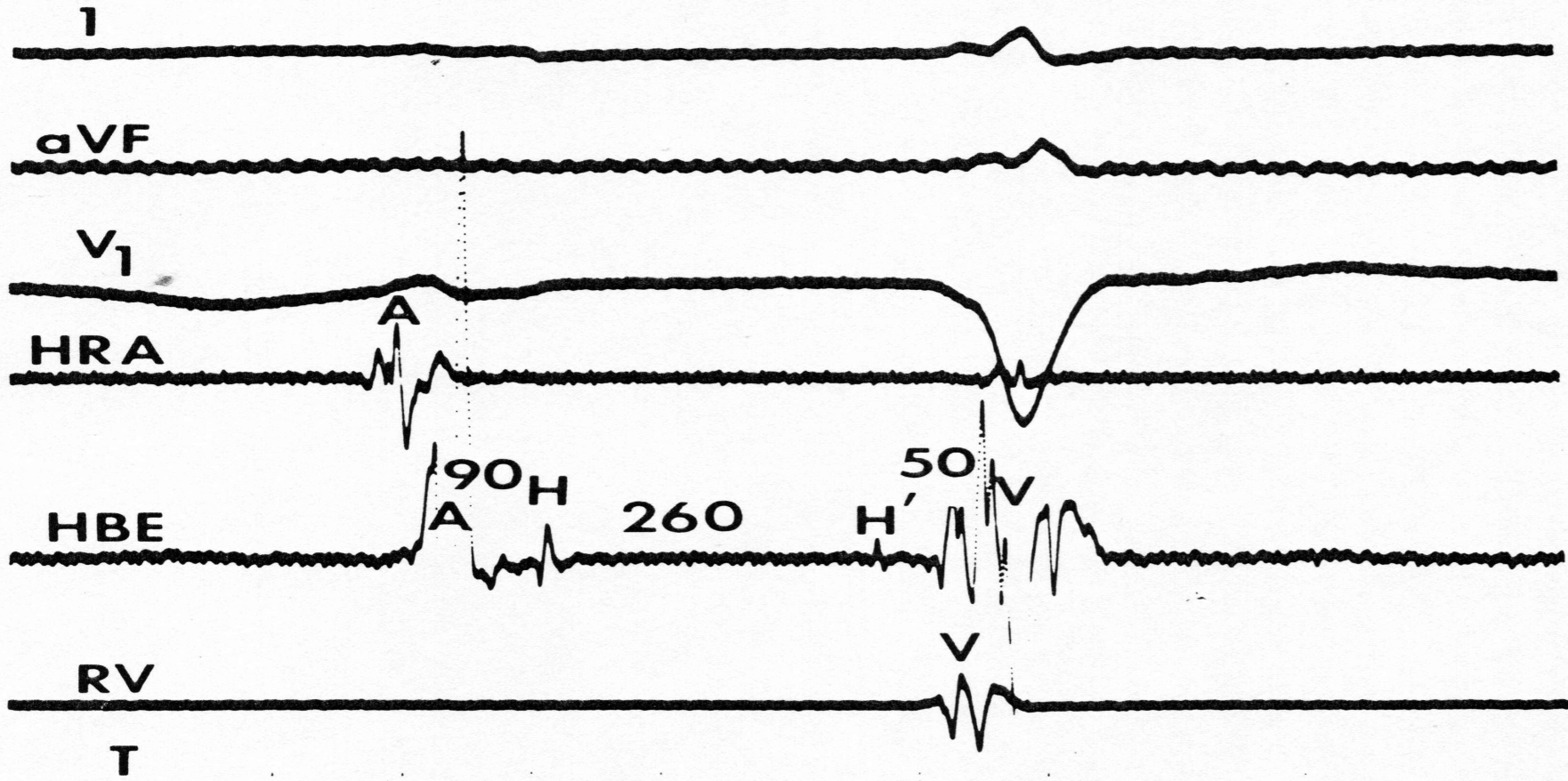
Basics of EP-study

PR 160msec



Basics of EP-study

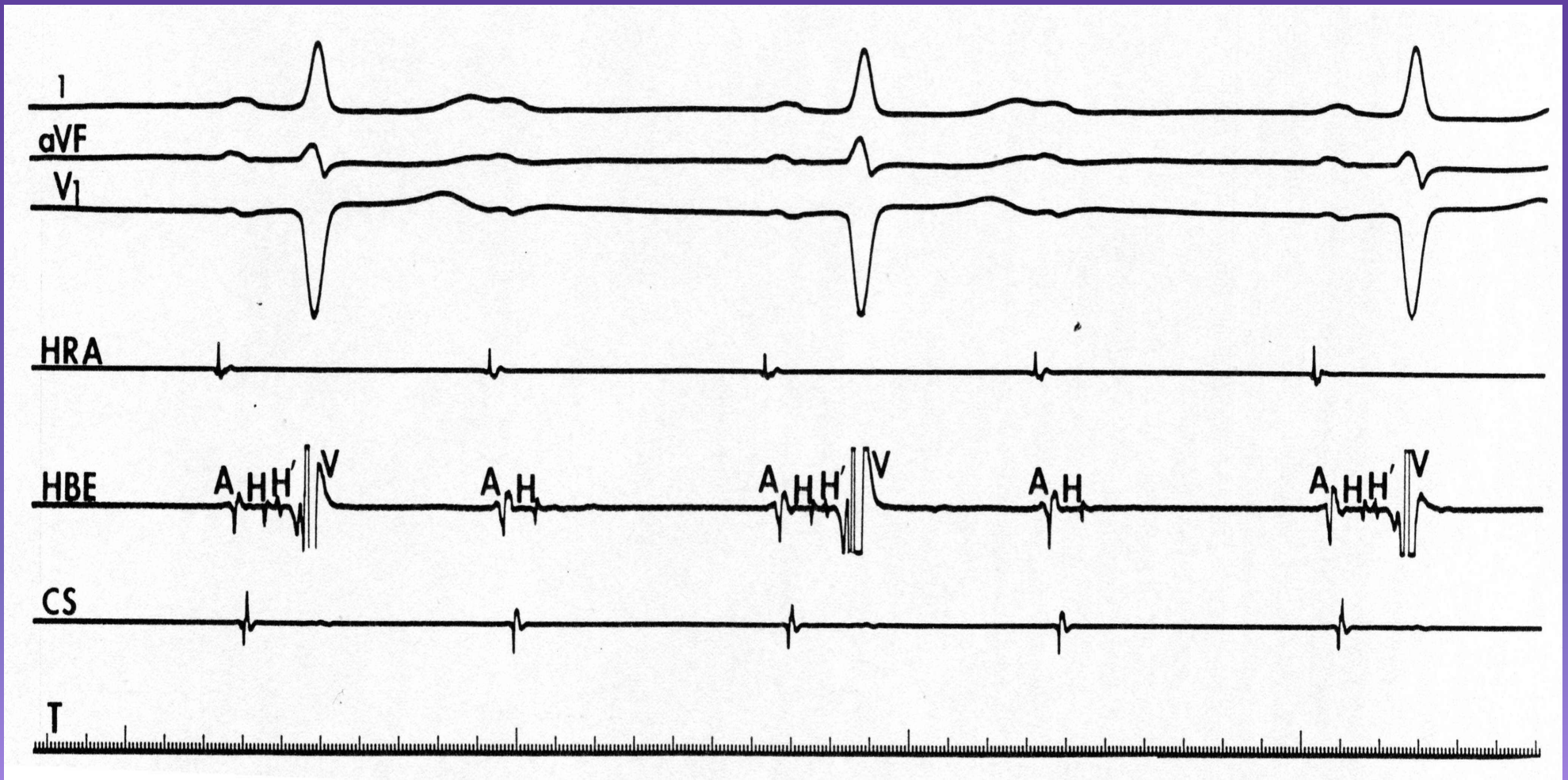
PR 430 msec



Basics of EP-study

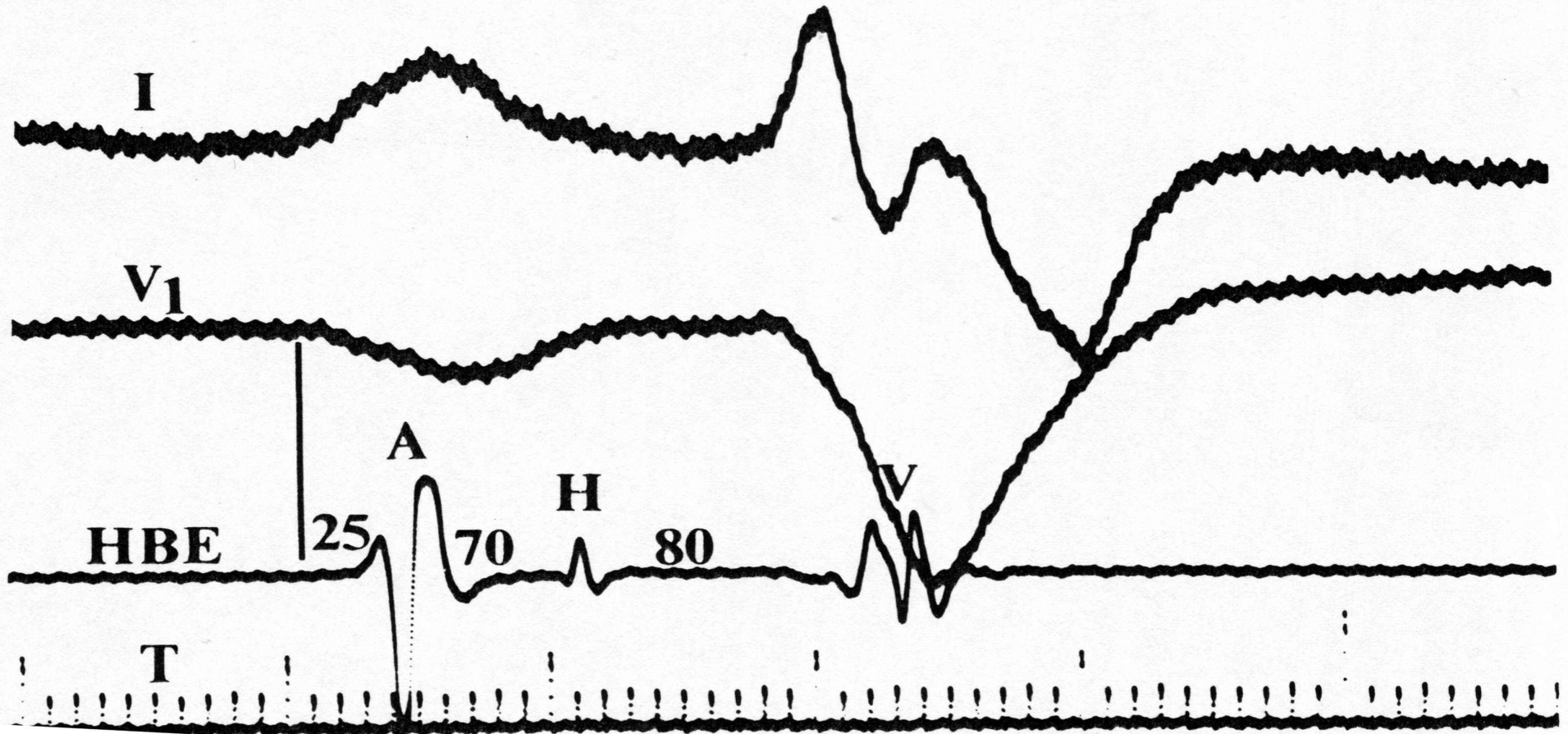


Basics of EP-study

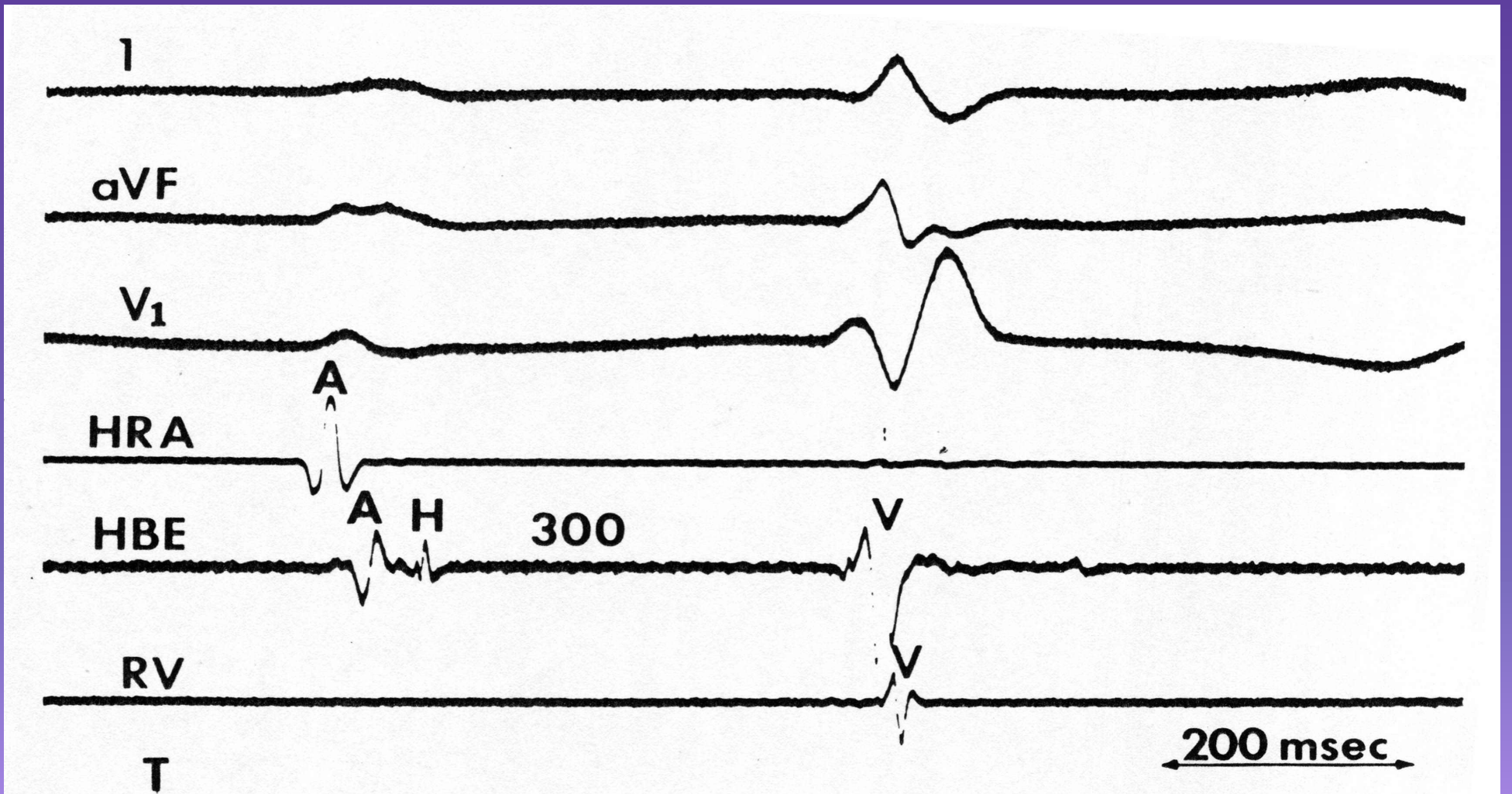


Basics of EP-study

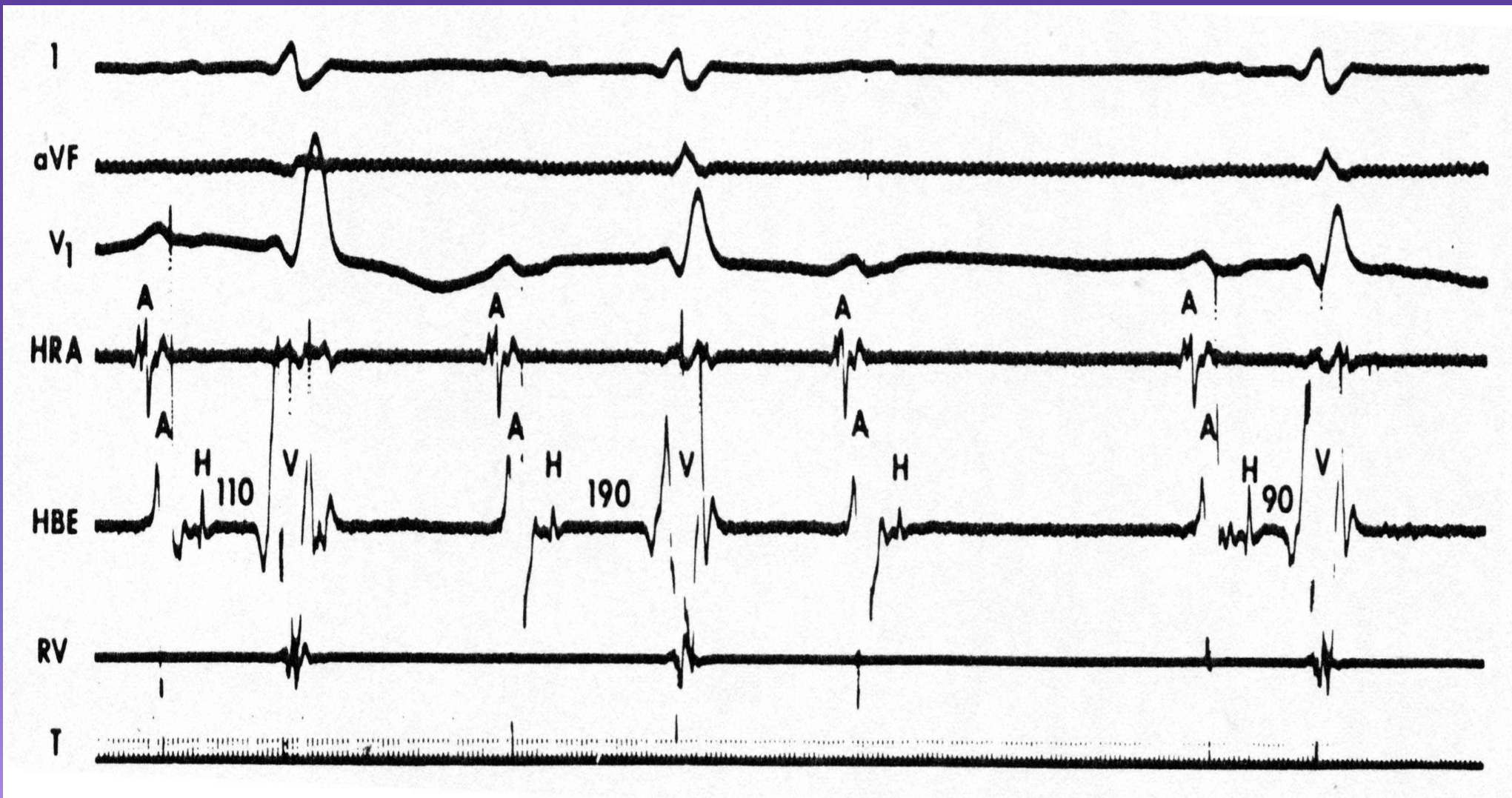
PR 175 msec



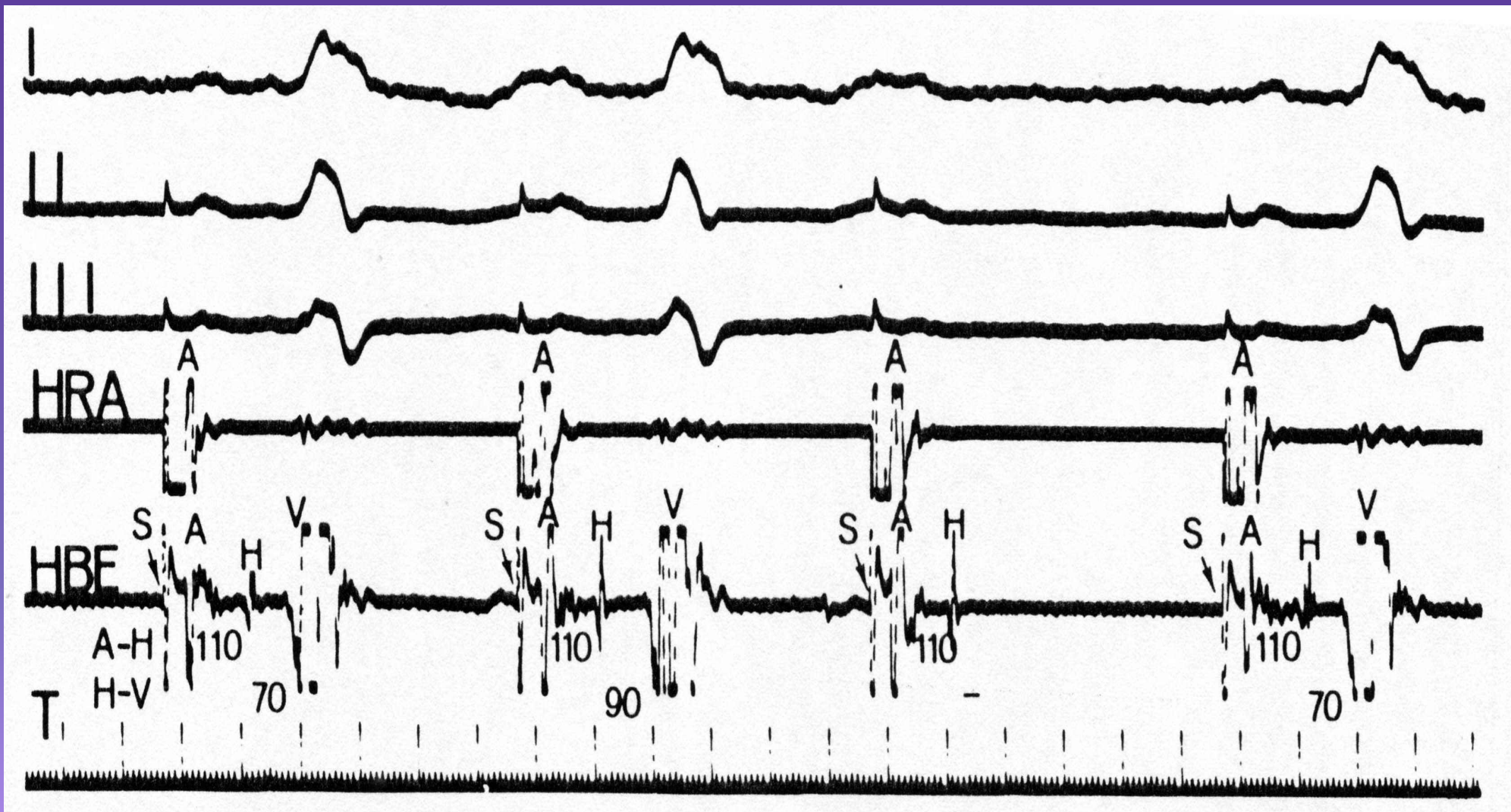
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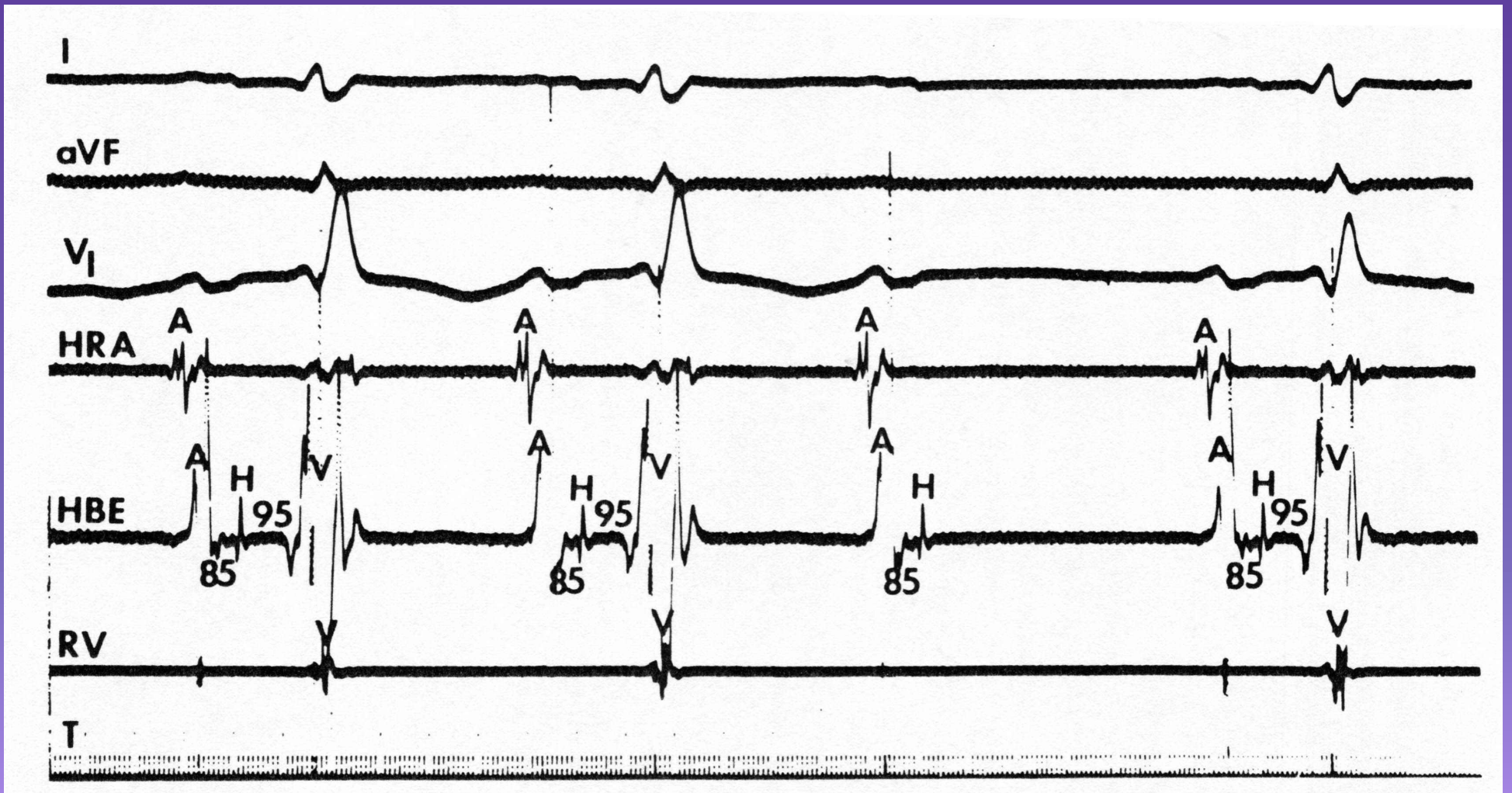
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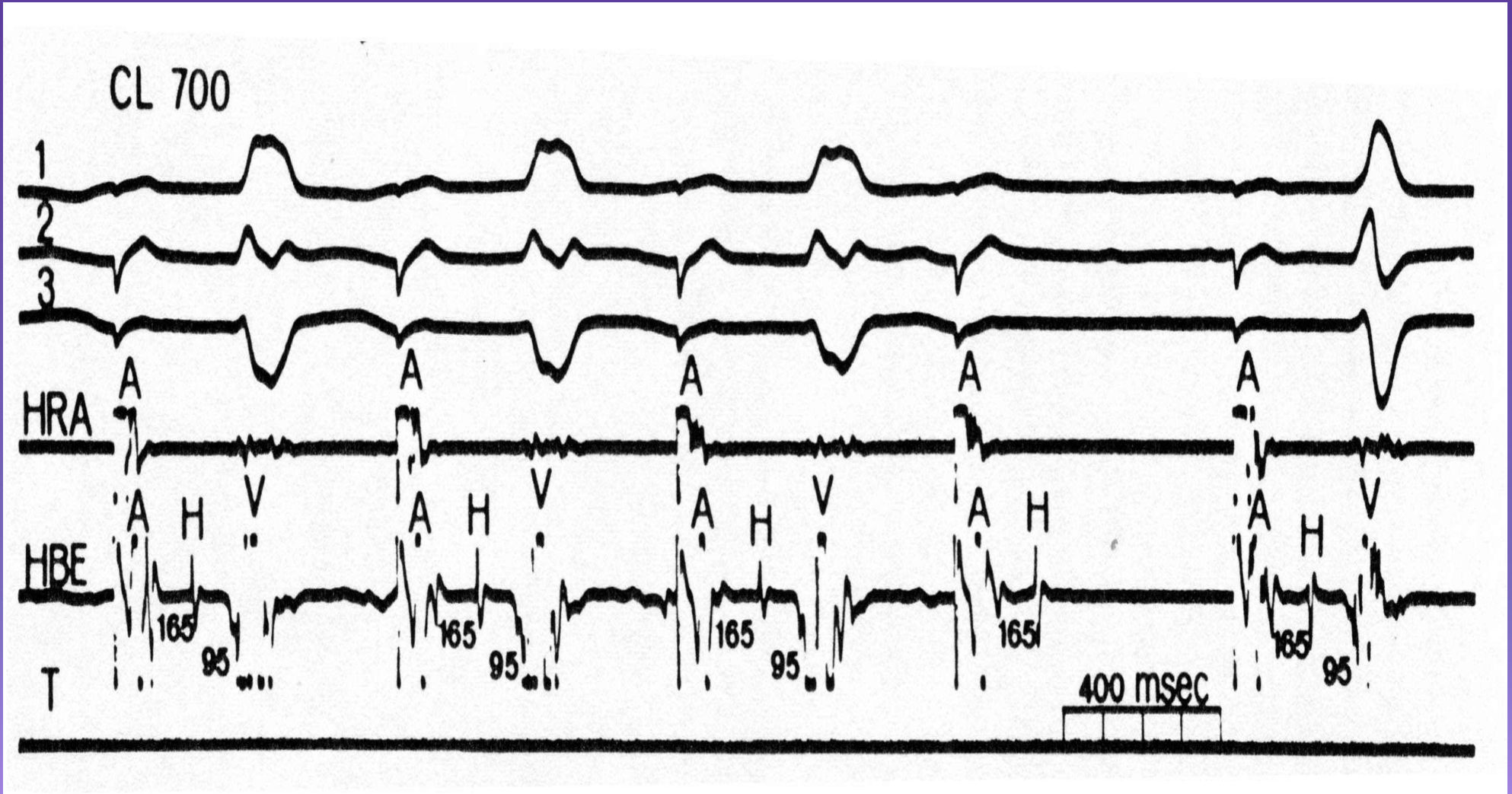
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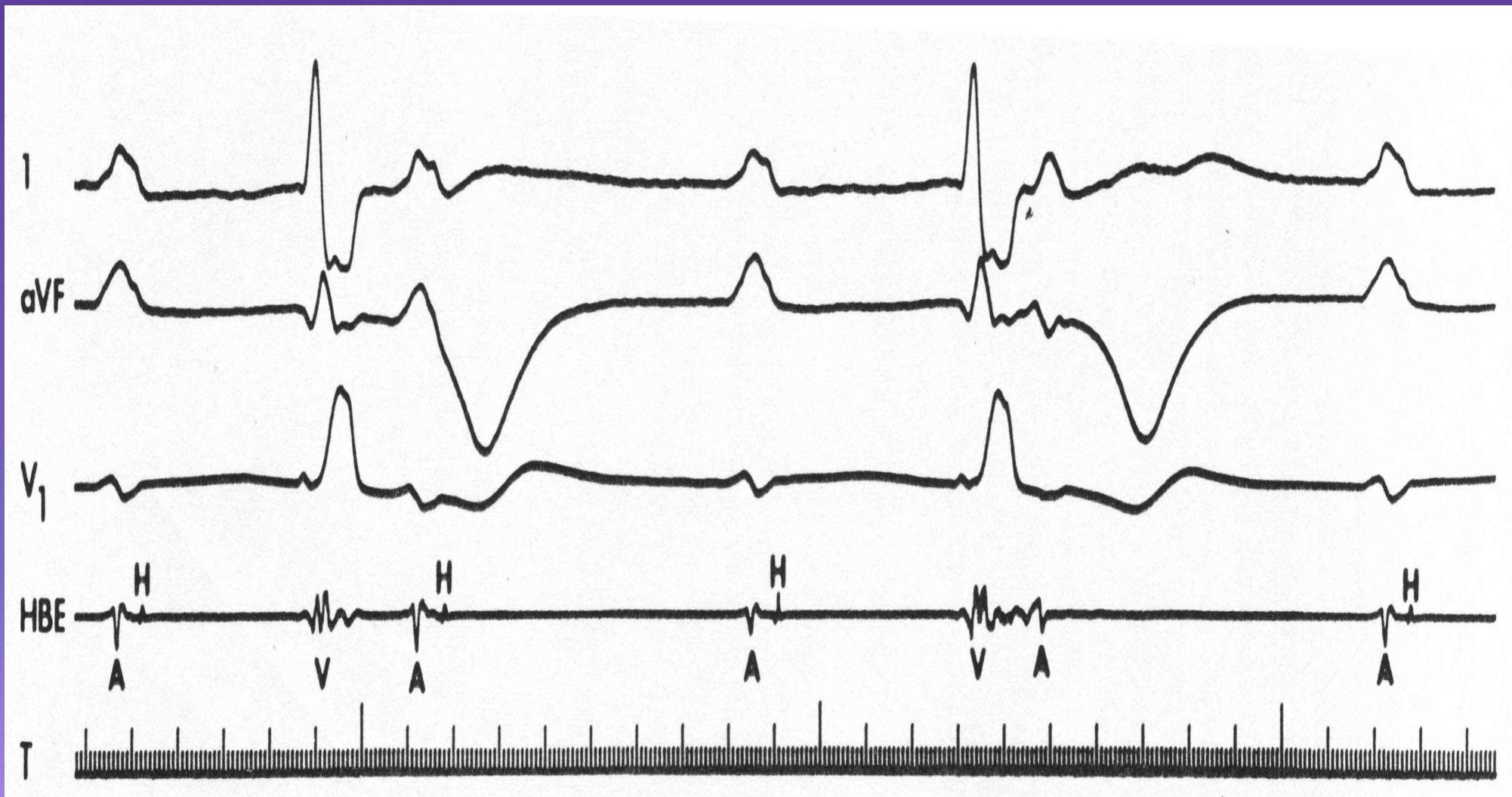
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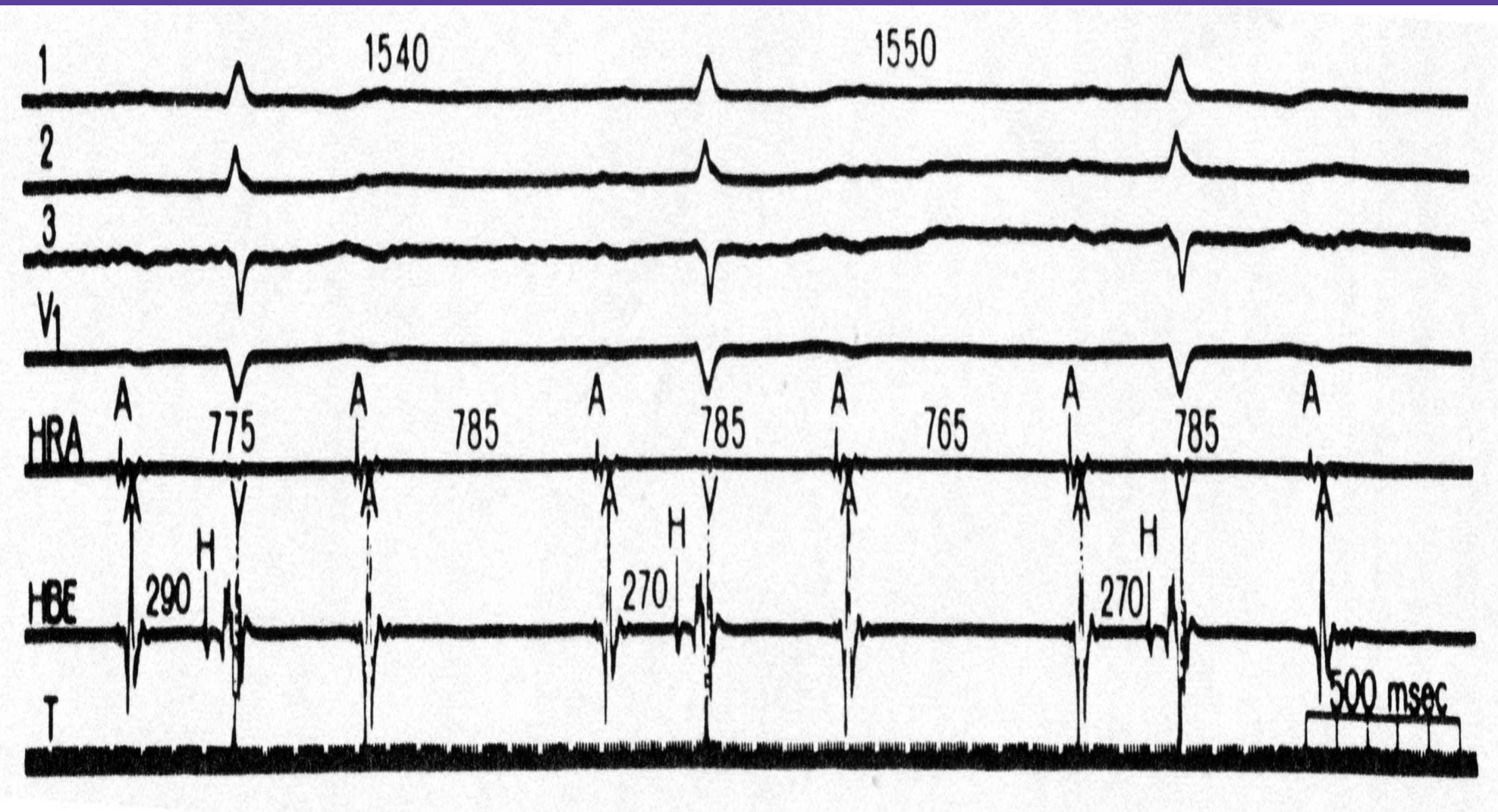
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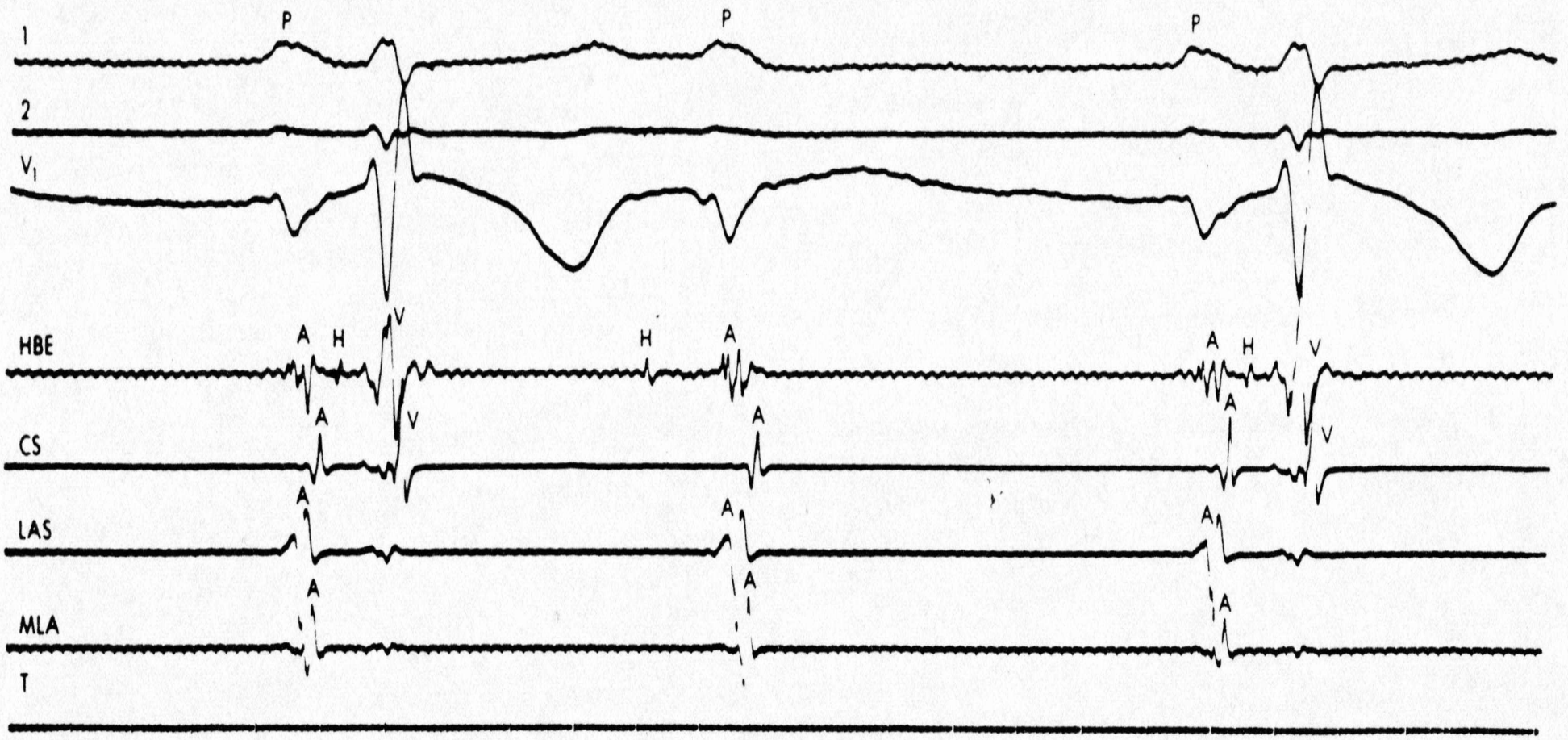
Basics of EP-study



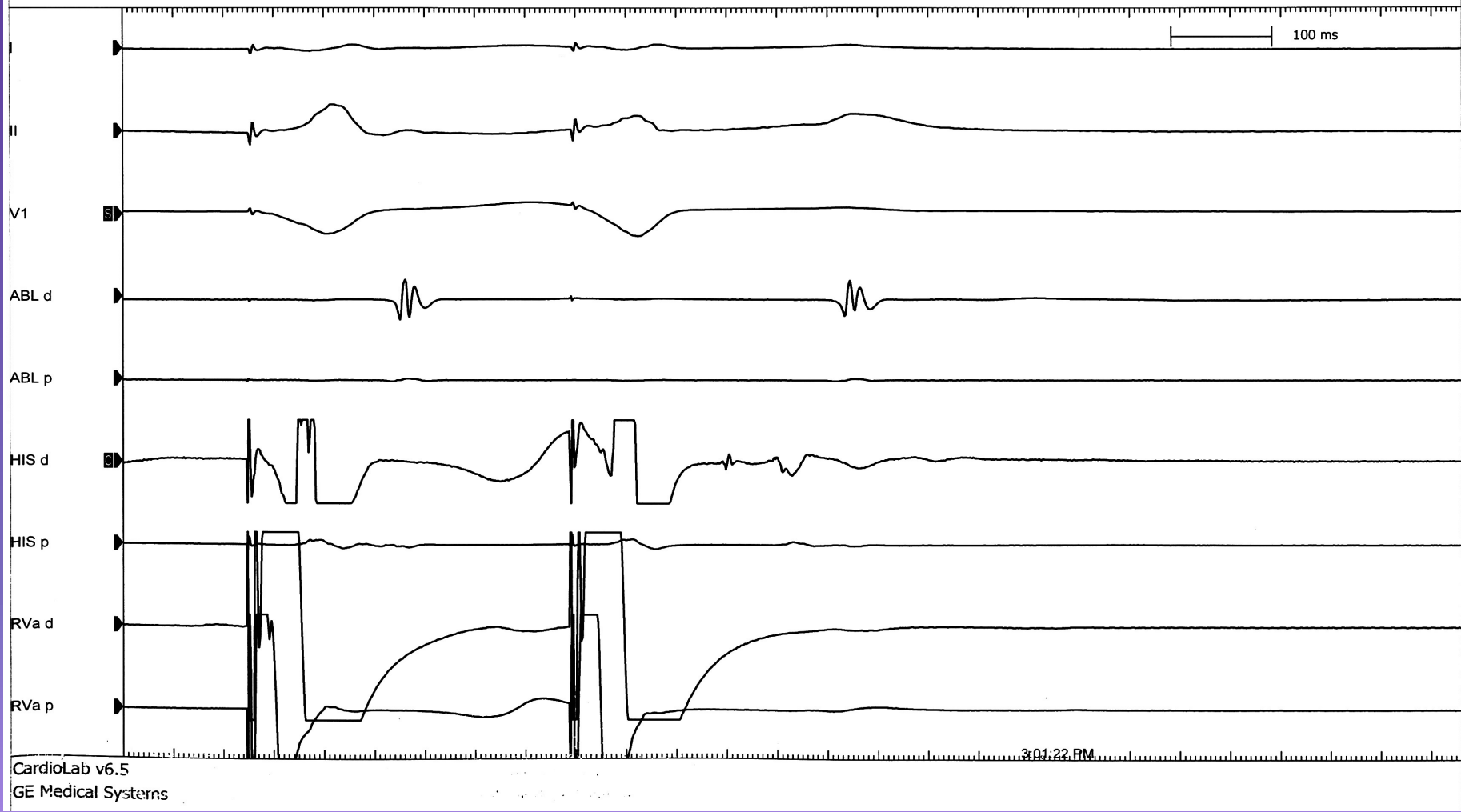
Basics of EP-study



Basics of EP-study



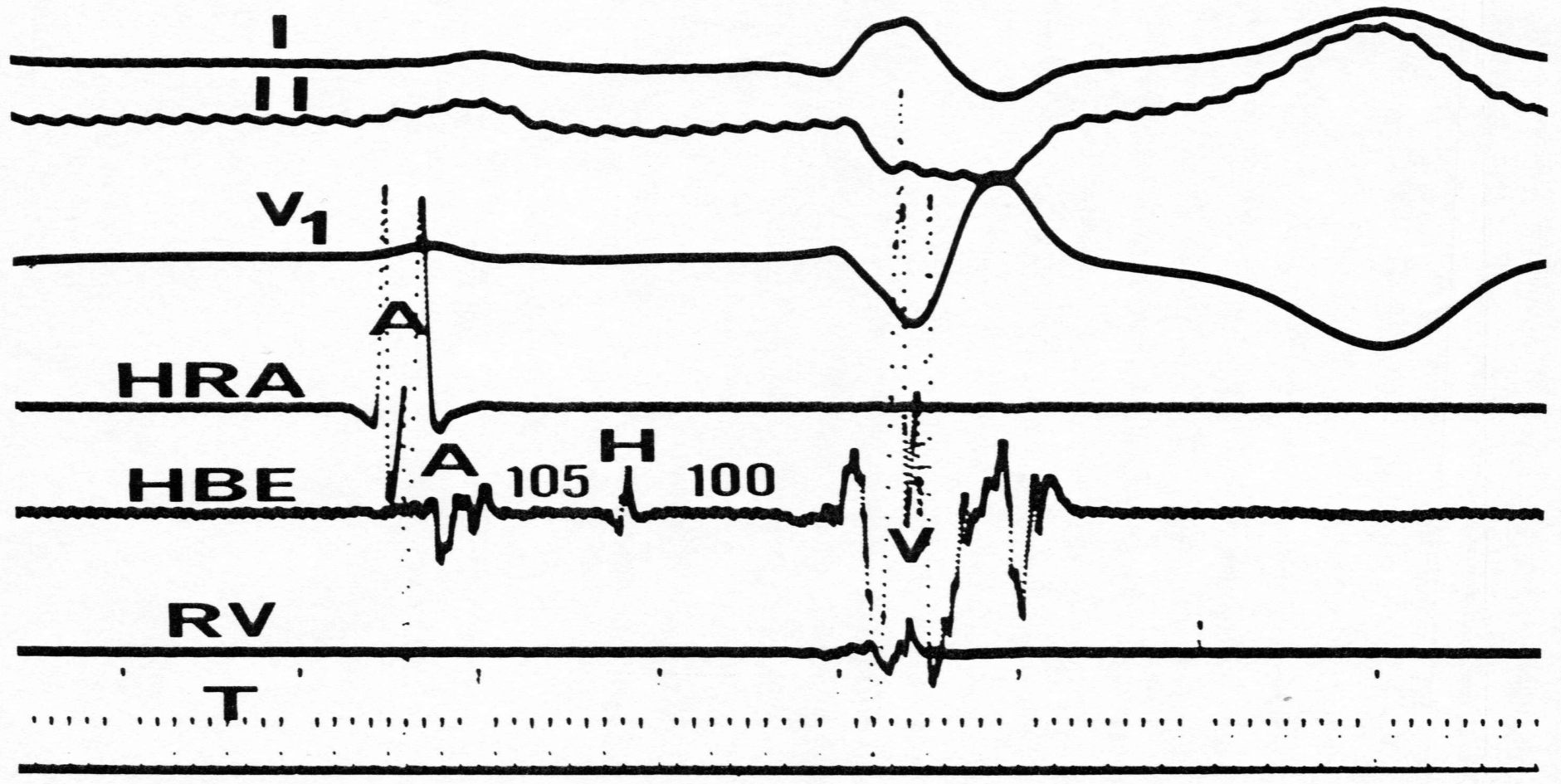
Basics of EP-study



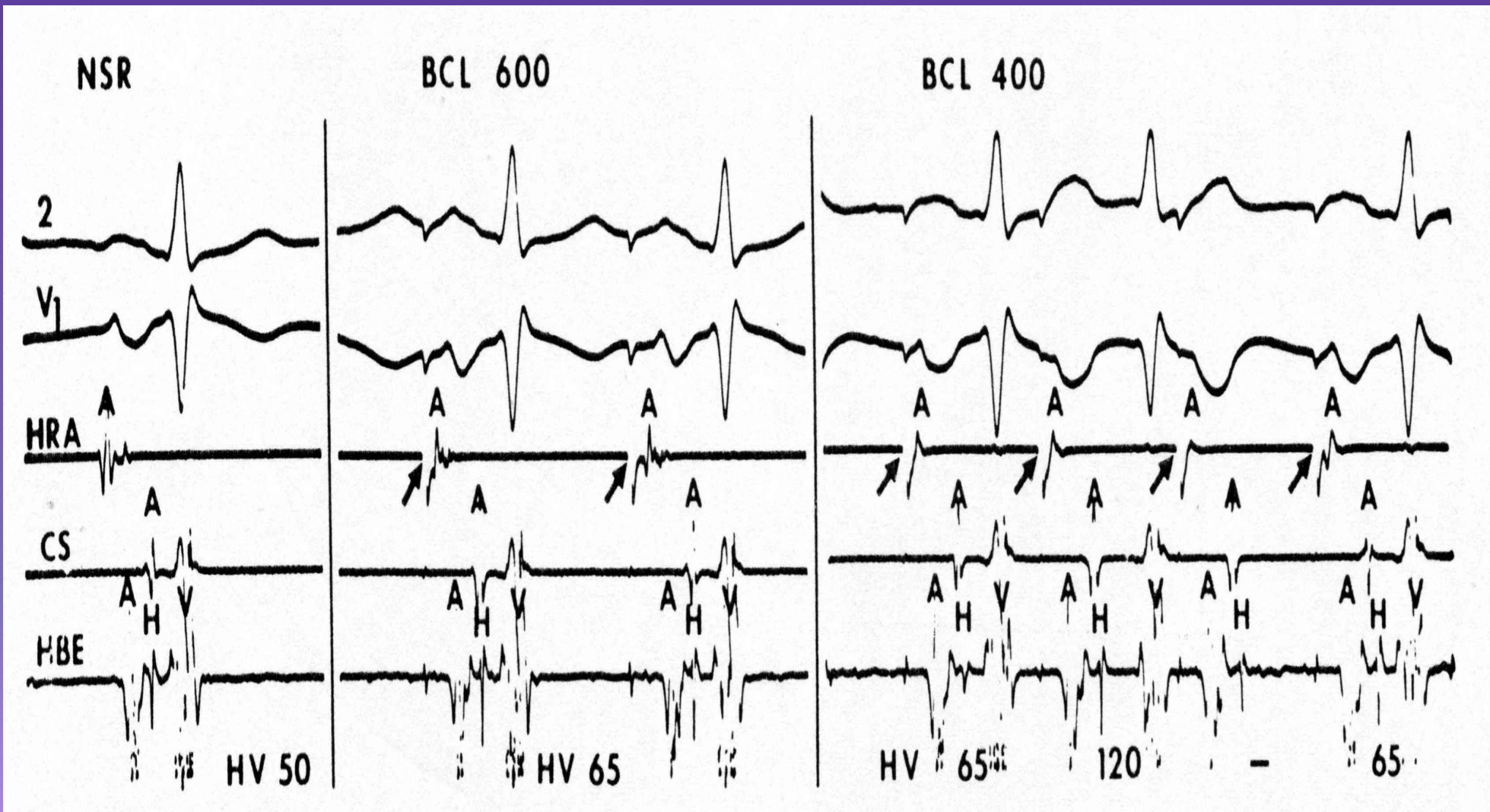
Basics of EP-study

- SYNCOPE

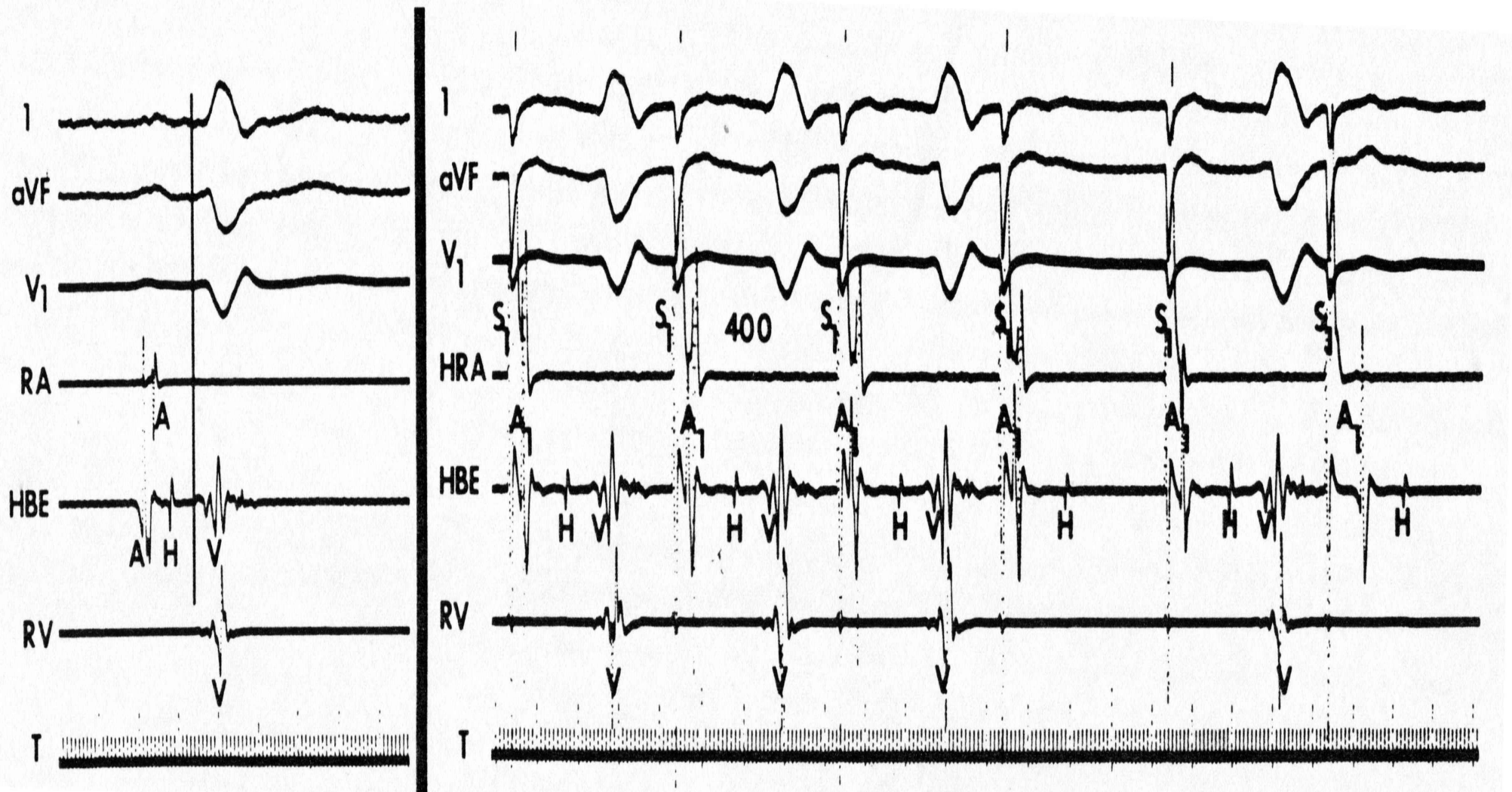
PR 245



Basics of EP-study



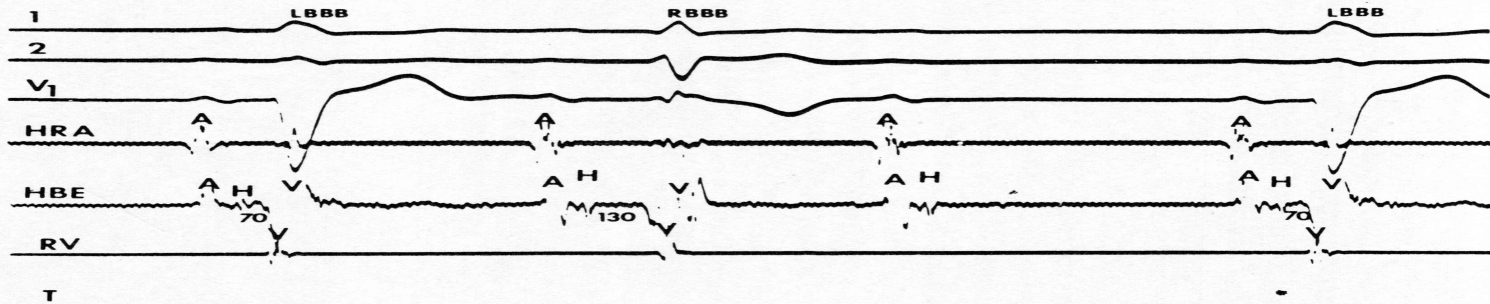
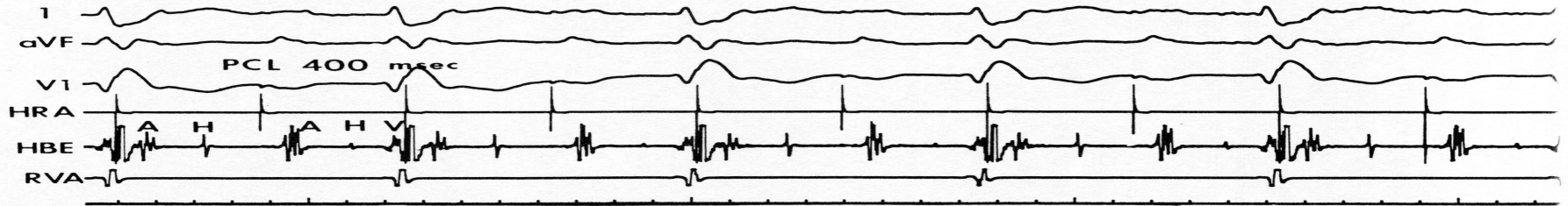
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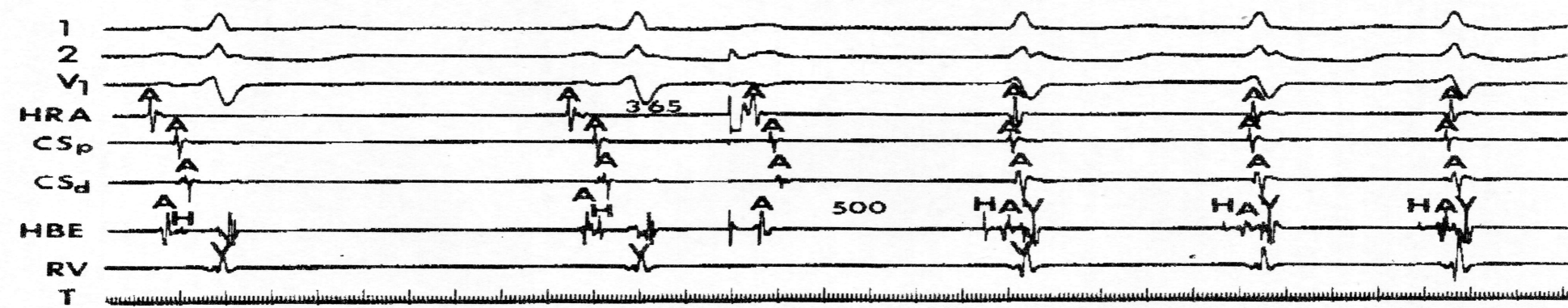
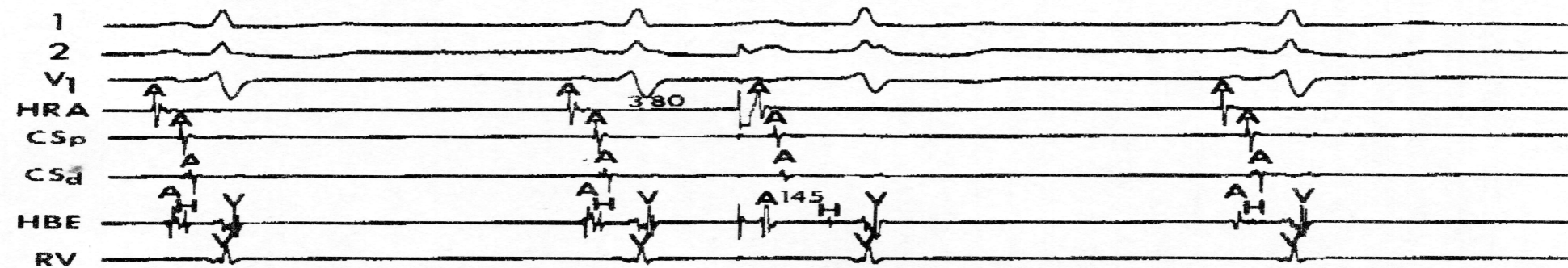
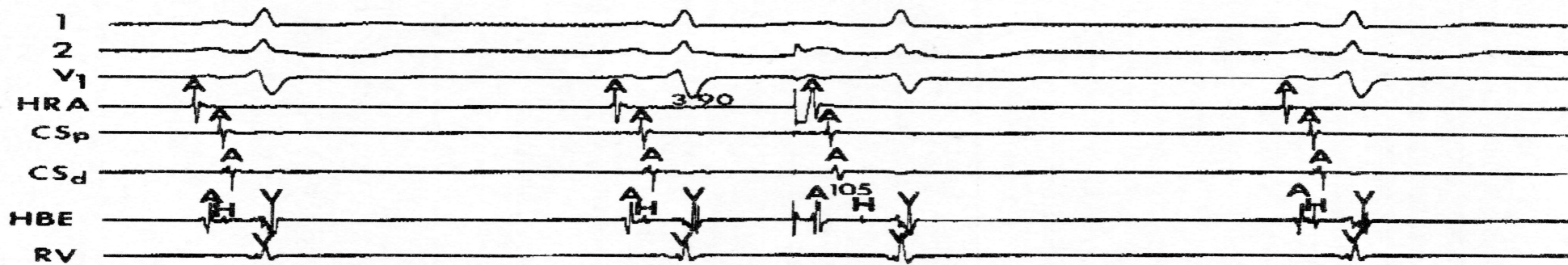
Basics of EP-study



PROCAINAMIDE 1000 mg

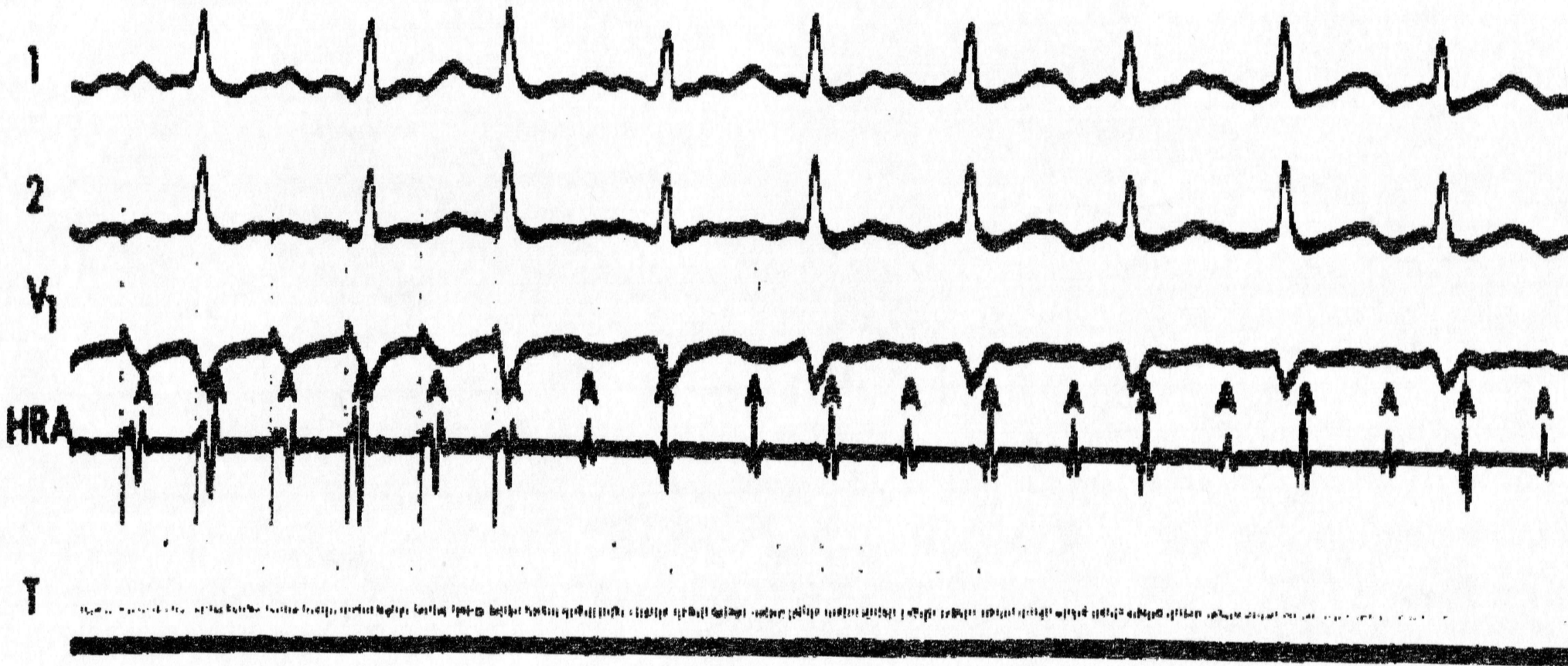


Basics of EP-study

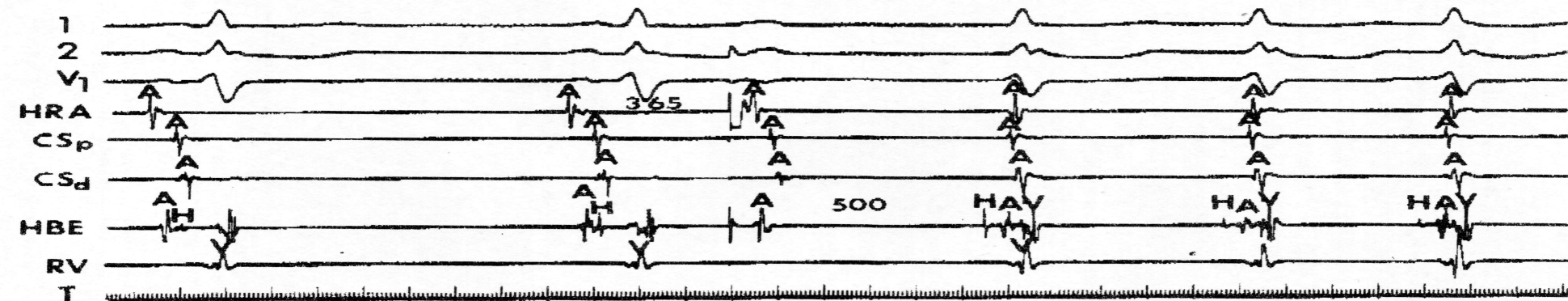
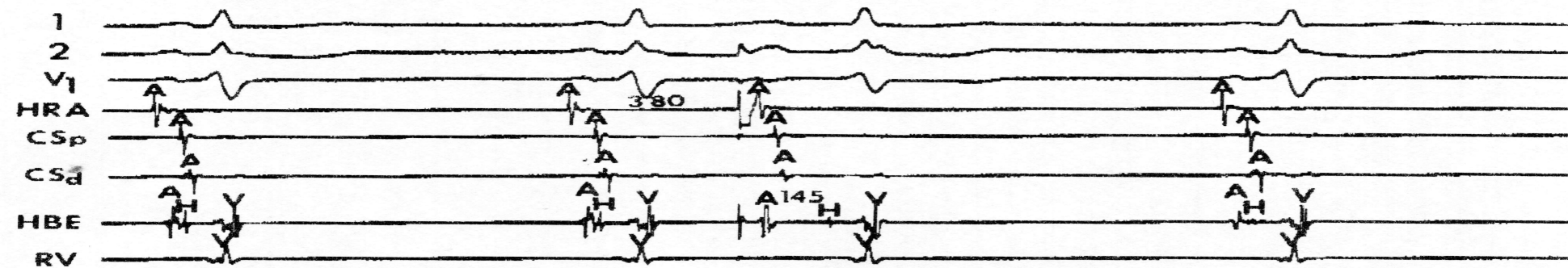
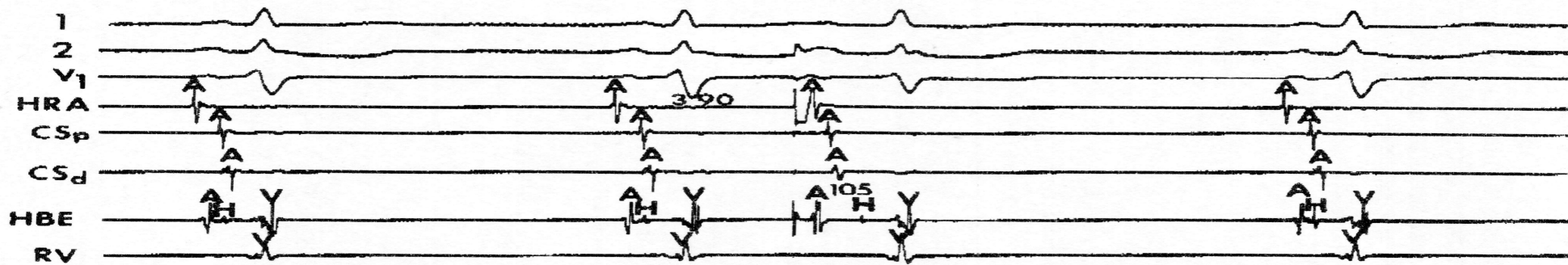


Basics of EP-study

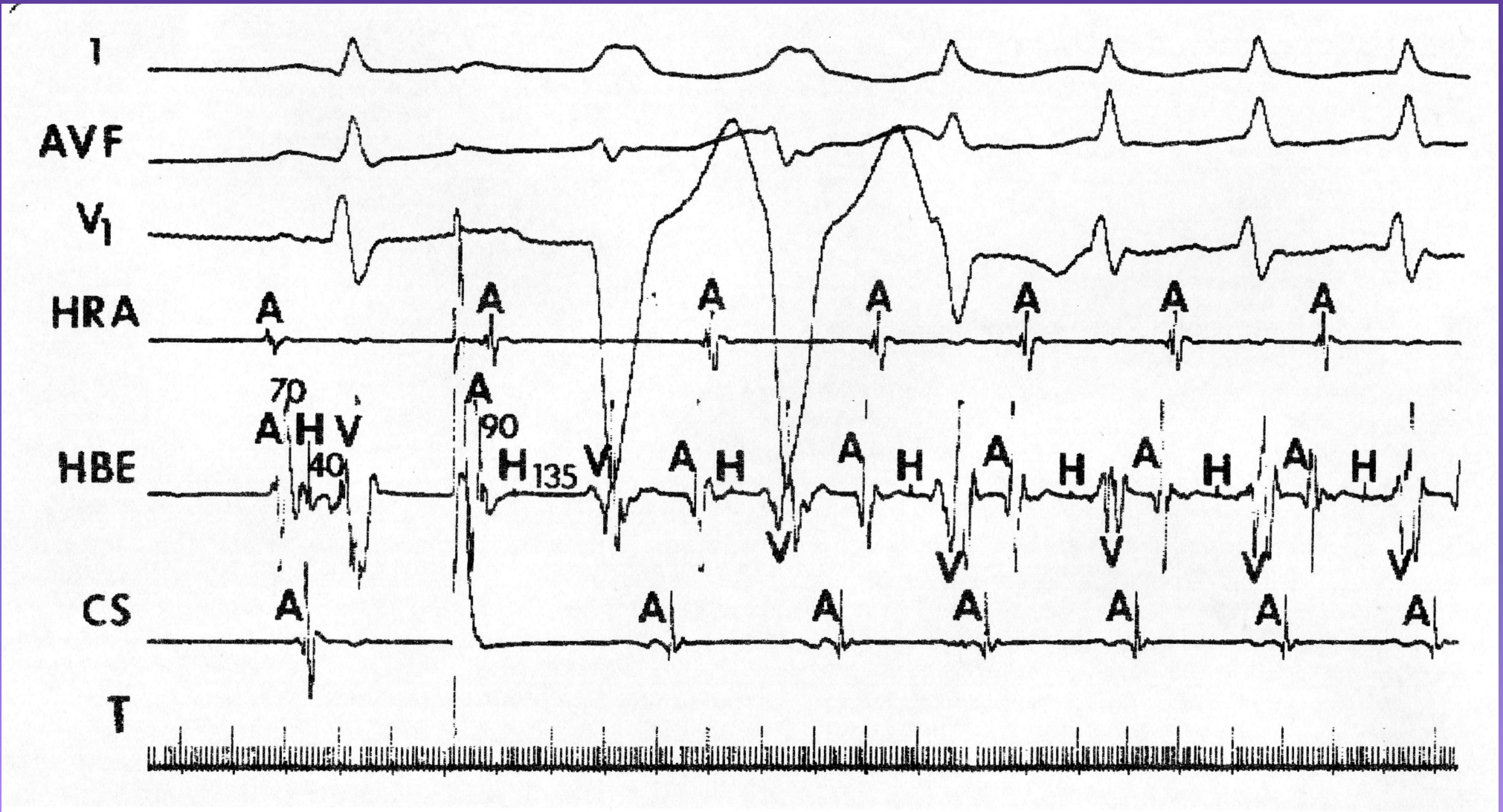
PCL 200 msec



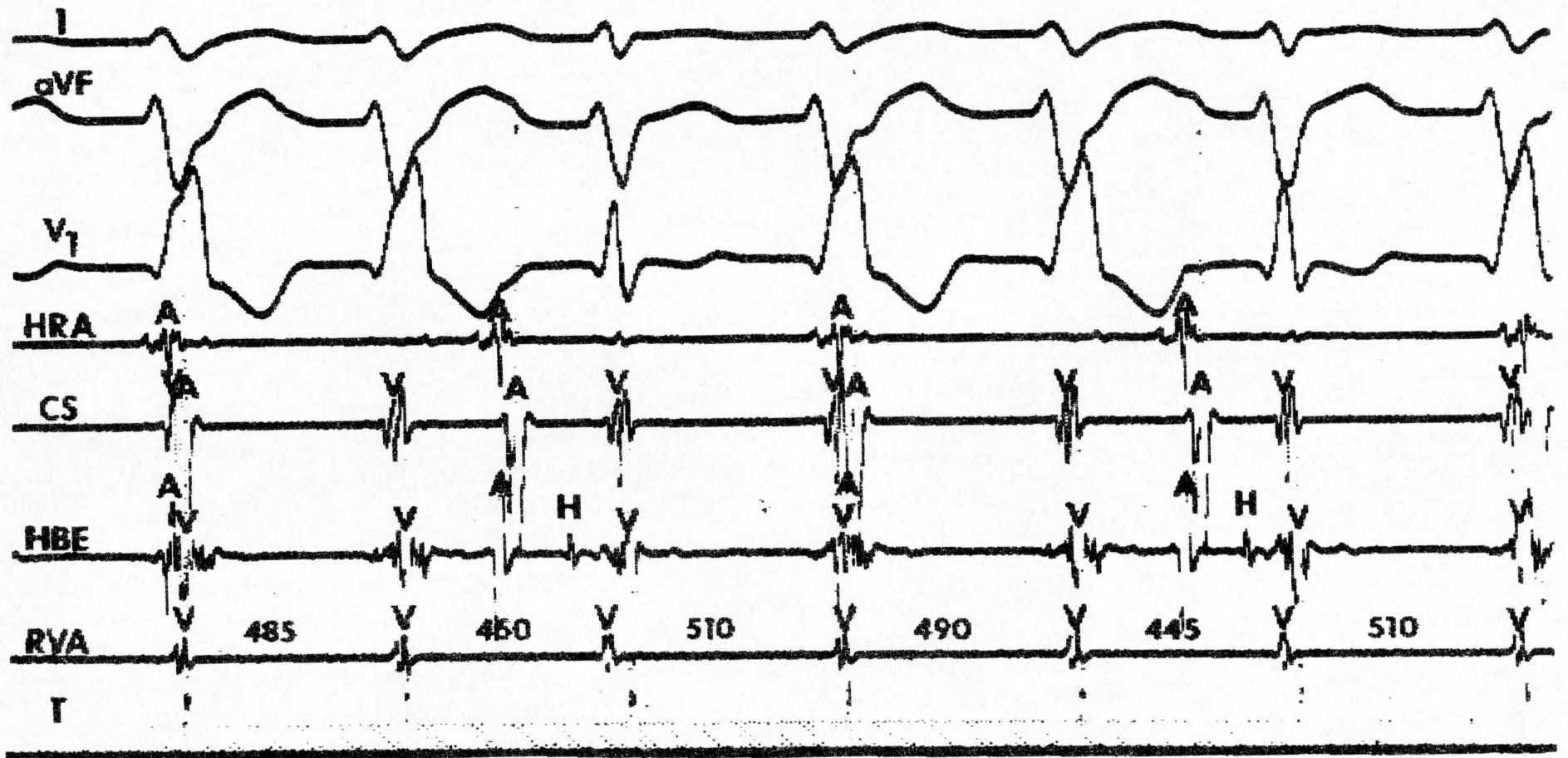
Basics of EP-study



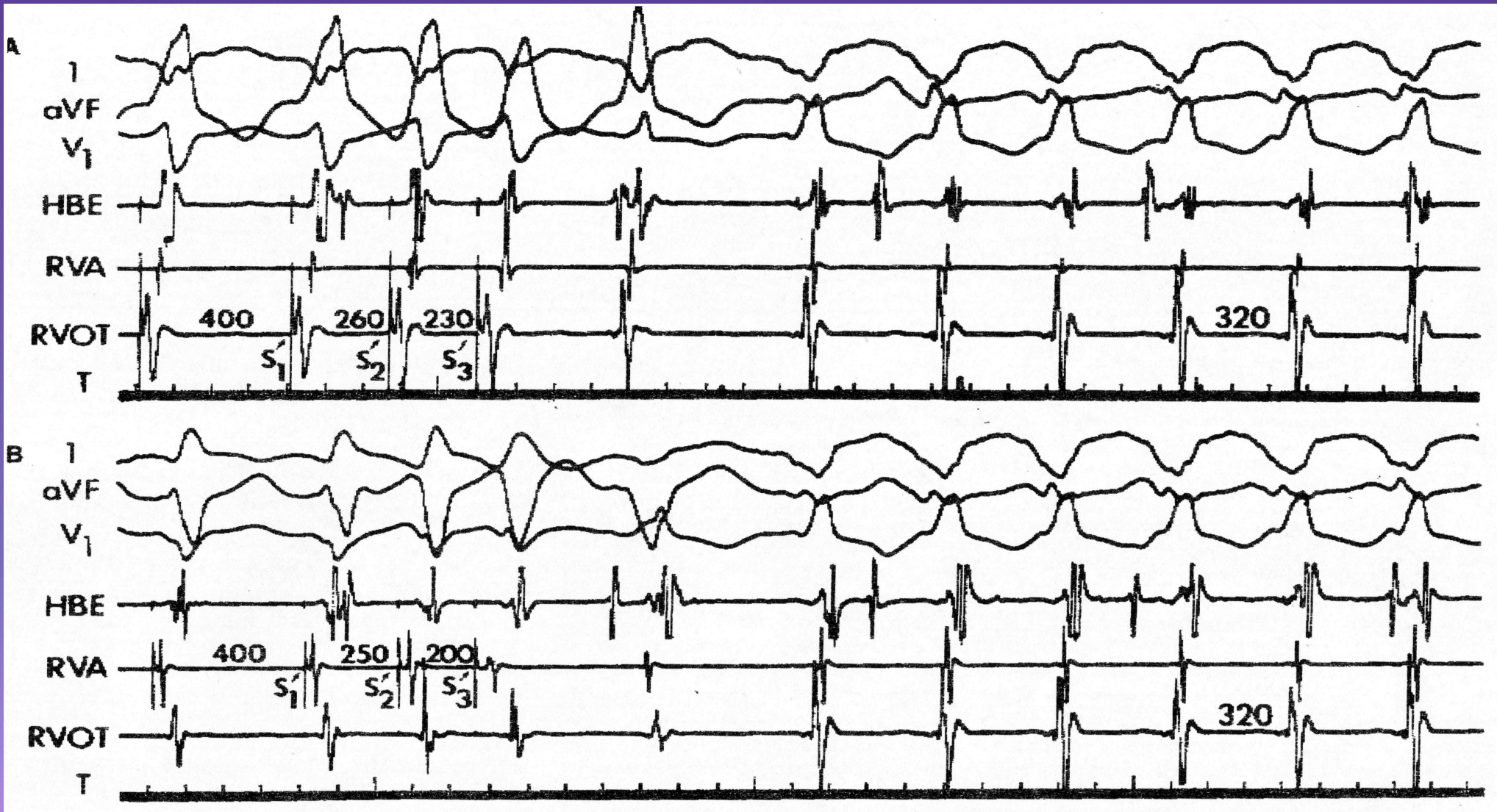
Basics of EP-study



Basics of EP-study



Basics of EP-study



Basics of EP-study