

**ATYPICAL ELECTROCARDIOGRAM AFTER
LATE POST SURGERY CORRECTION OF
OSTIUM PRIMUM ATRIAL SEPTAL DEFECT
WITH MITRAL VALVE CLEFT**

**ELETROCARDIOGRAMA ATÍPICO NUM
PÓS-OPERATÓRIO TARDIO DE CORREÇÃO
DE CIA TIPO OSTIUM PRIMUM ASSOCIADO A
FENDA MITRAL**

CASE REPORT

The patient is a 44-year-old man whose clinical and hemodynamic findings were consistent with Ostium Primum Atrial Septal Defect (about 6 to 7cm in diameter) with Mitral Valve Cleft. Both defects were repaired five years ago.

At surgery, the heart was found to be markedly enlarged. Both the right atrium and the right ventricle were described as huge. The left ventricle was also moderately enlarged. A moderate mitral insufficiency with moderate right atrial enlargement was observed. A postoperative hemodynamic study a year later revealed a residual Atrial Septal Defect with a pulmonary to systemic flow ratio of 2:1. A coronary arteriogram was normal.

The point of maximal impulse located in the 5th intercostal space just medial to the midclavicular line and is less than the size of a quarter.

Actually, we hear a wider fixed splitting of the second heart sound over the pulmonary area and on third left sternal border, and this does not become single or very closely split with expiration.

A pulmonary systolic murmur is also present.

There are not systolic murmur on mitral focus indicative of mitral regurgitation. Echocardiography confirmed competent mitral valve in the early and late postoperative periods.

APRESENTAÇÃO DE CASO

O paciente é um homem de 44 anos cujos resultados clínicos e hemodinâmicos eram compatíveis com defeito parcial de coxim endocárdico: CIA tipo Ostium Primum do (OP-ASD) (aproximadamente 6 7cm no diâmetro) associada a fenda na válvula mitral. Ambos os defeitos foram corrigidos há cinco anos. Na cirurgia foi encontrado marcada cardiomegalia. O ventrículo e o atrio direitos foram descritos como enormes. O ventrículo esquerdo foi considerado moderadamente aumentado assim como o átrio esquerdo.

Um estudo hemodinâmico pos-operatório realizado um ano mais tarde revelou uma CIA residual com uma relação fluxo pulmonar/sistêmico 2:1 e reparo mitral competente. O arteriograma coronário era normal.

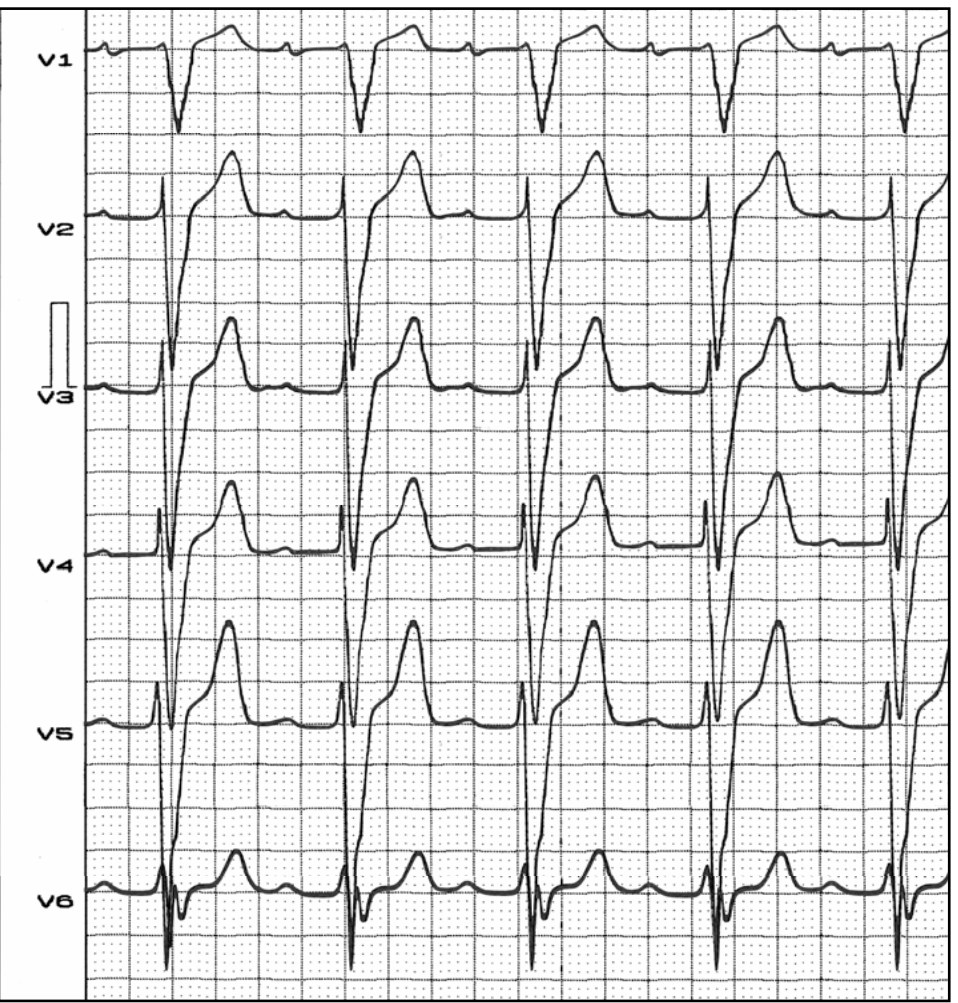
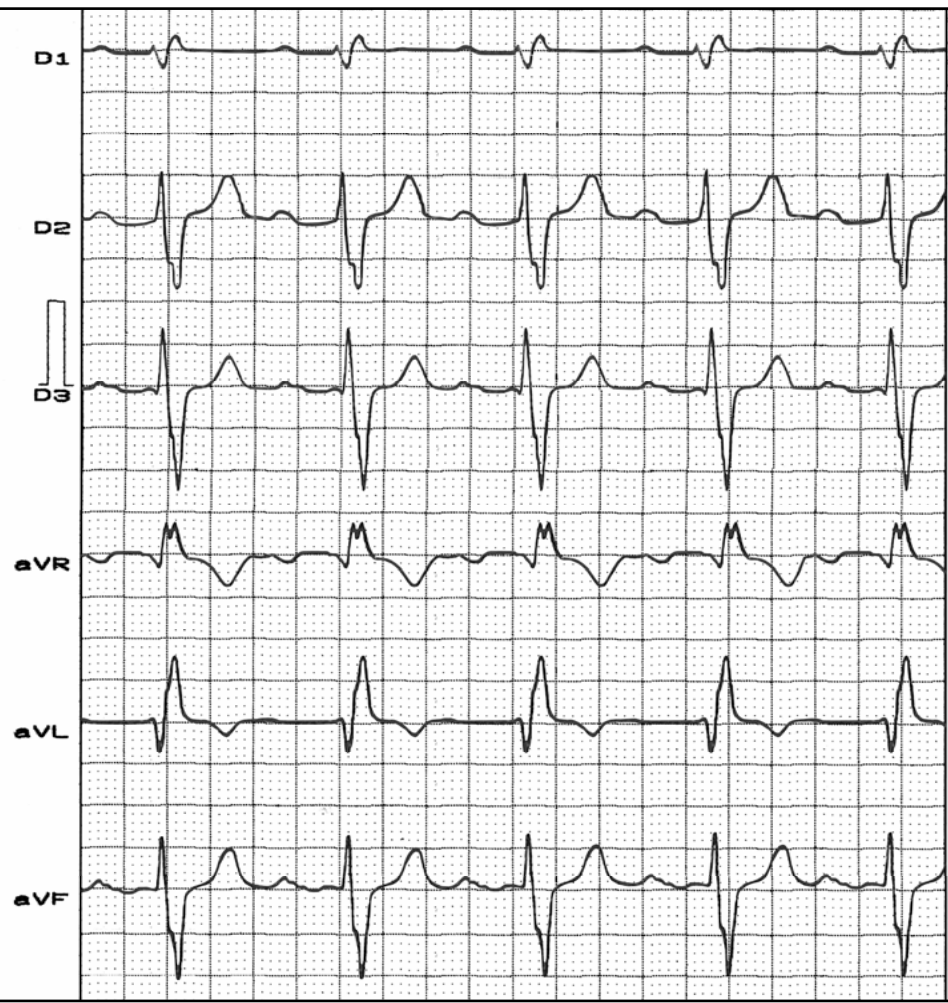
Atualmente, ouve-se um desdobramento amplo e fixo da segunda bulha sobre o foco pulmonar e terceiro espaço intercostal esquerdo sobre a borda esternal.

O desdobramento permanece amplo e fixo com a expiração.

Um sopro sistólico 3/6 em foco pulmonar está presente.

Não se ausculta sopro sistólico de regurgitação em foco mitral.

Pulsos periféricos normais e regulares. PA 125/75mmHg.



Atrioventricular Septal Defect: Main ECG Features

The typical ECG features in atrioventricular Septal defect or Endocardial Cushion Defect consists of a combination of:

I) Rhythm: Sinus is the rule. Complete AV block and /or atrial fibrillation or flutter can be present in older patients.

II) P wave: normal P wave or Left Atrial Enlargement (LAE), Right Atrial Enlargement (RAE) or Biatrial Enlargement (BAE) patterns could be;

III) PR interval: Atrioventricular (A-V) conduction abnormalities usually first-degree AV block. PR prolonged is observed in 50% of the cases by increase of AV conduction time;

IV) QRS axis: Extreme superior axis deviation with Counter Clock Wise (CCW) inscription on the frontal plane **simulating** Left Anterior Fascicular Block (LAFB) LAFB similar pattern: In II, III and aVF, rS-type QRS complexes with notch in the ascending limb of S wave, qR complexes in I and aVL.

Rarely vectors with a figure-of-eight pattern or flat loop closely applied to the horizontal axis maybe seen¹.

V) Incomplete or Complete Right Bundle Branch Pattern (IRBBB or CRBBB): Triphasic QRS (rsR' or rSR') nearly always present in right precordial leads V3R V1 and V2 and broader S wave in I, aVL, V5 and V6 and aVR lead with qR pattern.

1. Evans JR, Rowe RD, Keith JD. The clinical diagnosis of atrial septal defect in children. Am J Med. 1961 Mar;30:345-356.

VI) Right Ventricular Hypertrophy (RVH) or Right Ventricular Enlargement (RVE): criteria of RVE are frequently present. More evident signs of RVE are observed in complete forms (Ostium Atrium Ventricularis Communis).

VII) Left Ventricular Hypertrophy or Left Ventricular Enlargement: Where there is a significant ventricular shunt or left mitral atrioventricular valve incompetence.

VIII) Biventricular hypertrophy or biventricular enlargement BVE or BVH: Eventually are observed.

IX) ECG after correction: Postoperatively are frequent conduction abnormalities as complete A-V block or Left Bundle Branch Block (LBBB). In adult patients as late as ten years following surgery^{1; 2}. Additionally, some type of arrhythmia in the postoperative period in ostium primum atrial septal defect of a larger size are frequent.

1. McMullan MH, McGoan DC, Wallace RB, Danielson GK, Weidman WH. Surgical treatment of partial atrioventricular canal. Arch Surg. 1973 Nov; 107:705-710.
2. Landtman B. Postoperative changes in the electrocardiogram in congenital heart disease. II. Coarctation of the aorta and patent ductus arteriosus. Circulation. 1954 Dec;10:871-86.

ANATOMICAL COMPARISON BETWEEN THE NORMAL INTRAVENTRICULAR CONDUCTION SYSTEM AN ATRIOVENTRICULAR SEPTAL DEFECT(AVSD)

	Normal Intraventricular Conduction System	Atrioventricular Septal Defect
AV node	To front related to AVSD	In dorsal position related to the normal one
His Bundle Branch	Longer and to front.	Shorter and backward.
Right Bundle diameter	1,5 to 2mm	<1mm
Right Bundle length	45 to 60mm	80mm
Left Anterior Fascicle diameter	3mm	1mm. Hypoplastic.
Left Anterior Fascicle length	35mm	70mm
Left Posterior Fascicle	Late onset	Earlier onset

Anatomical basis explains RBBB pattern and posteroinferior early ventricular activation with delayed anterosuperior activation: **Pseudo Left Anterior Fascicular Block.**

	Isolated Ostium Primum ASD	Ostium Primum AVSD with Cleft Mitral Valve	Common Atrium and Cleft Mitral Valve	Common AV Canal
Clinical Features	Absence of mitral murmur	Dyspnea 50% of cases. Congestive heart failure and cyanosis in ≈ 7% Mitral murmur secondary to mitral insufficiency,	Cyanosis with exercise. Mitral murmur usually absent.	Cyanosis with crying is the rule. Tachypnea, repeated respiratory infections, poor feeding, and failure to thrive are frequent. Characteristics of Down syndrome. Common signals of Congestive Heart Failure. Overactive precordium. The volume and pressure overload on the right ventricle result in a prominent systolic heave along the left sternal border and subxiphoid regions. The first heart sound is single and often accentuated, Second sound closely split with an accentuated pulmonary component.
ECG/VCG	Absence of LAE or LVH signals. CCW rotation, superior axis or indeterminate.	Superior axis between -50° -- 130° Rarely figure in 8 around the X line. Biventricular enlargement is predominant LAE in ≈ 30% of cases.	P wave axis - 60° Common left axis deviation with CCW rotation on FP. Right ventricular Hypertrophy is more frequent. Eventually biventricular Enlargement.	LAE: 10% of cases. QRS axis between -60° and -140°. Occasionally in 8 around X line. Biventricular enlargement. Eventually isolated RVH.
X- Roentgenogram Cardiothoracic ratio	< 65%	>65% in 50% of cases.	>65% 40% of cases.	>65% > 50% of cases. Pulmonary plethora.
Echocardiogram	Right Ventricular Volume overload. The left ventricular outflow track appears narrowed. Abnormal anterior displacement of the mitral valve. Prolonged apposition of the anterior mitral valve leaflet.	Eventual left atrial enlargement. Right Ventricular Volume overload. The left ventricular outflow track appears narrowed. Abnormal anterior displacement of the mitral valve. Prolonged apposition of the anterior mitral valve leaflet.	Right Ventricular Volume overload. The left ventricular outflow track appears narrowed. Abnormal anterior displacement of the mitral valve. Prolonged apposition of the anterior mitral valve leaflet.	The anterior leaflets of the mitral and tricuspid valves are contiguous in the plane of the ventricular septum in diastole when the septal echoes appear deficient. A single leaflet appearing predominantly mitral may pass through the septum and merge with the tricuspid valve.

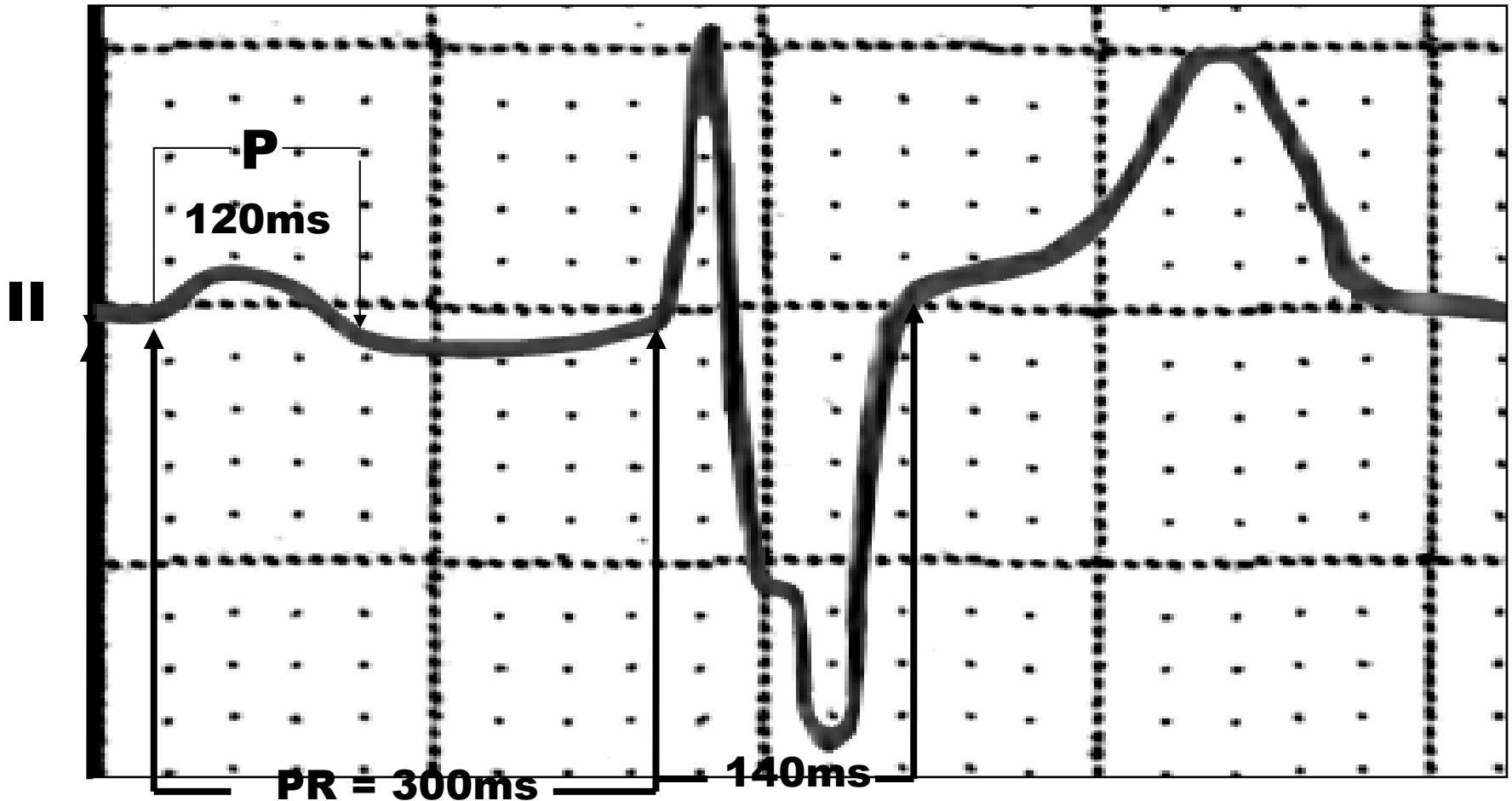
Our ECG diagnosis in present case

Rhythm: Sinus; **HR:** 71bpm; **P wave:** P axis: + 60° and to front; P duration: broad P wave (120ms) prolonged SAE; P voltage: <1mm.; **PR interval:** 300ms First-degree AV block.; **QRS axis:** near -90° extreme superior deviation with clock wise rotation; **QRS duration:** 140ms. Complete bundle branch block.; **QRS pattern in inferior leads:** rS pattern with deep and wide S wave. Notch in descendent ramp of S wave.; **QRS pattern in I and aVL:** rsr' pattern in lead I and rSR' in aVL.; **QRS pattern in aVR:** qR with prominent final R wave.; **QRS pattern in precordial leads:** rS pattern from V1 to V5. . In lead V6 there was a small R'.; **ST/T:** The T axis in + 90° in FP and directed to front and leftward in HP. T wave opposite to QRS complex with an angle near the 180°.; QTc: 400ms.

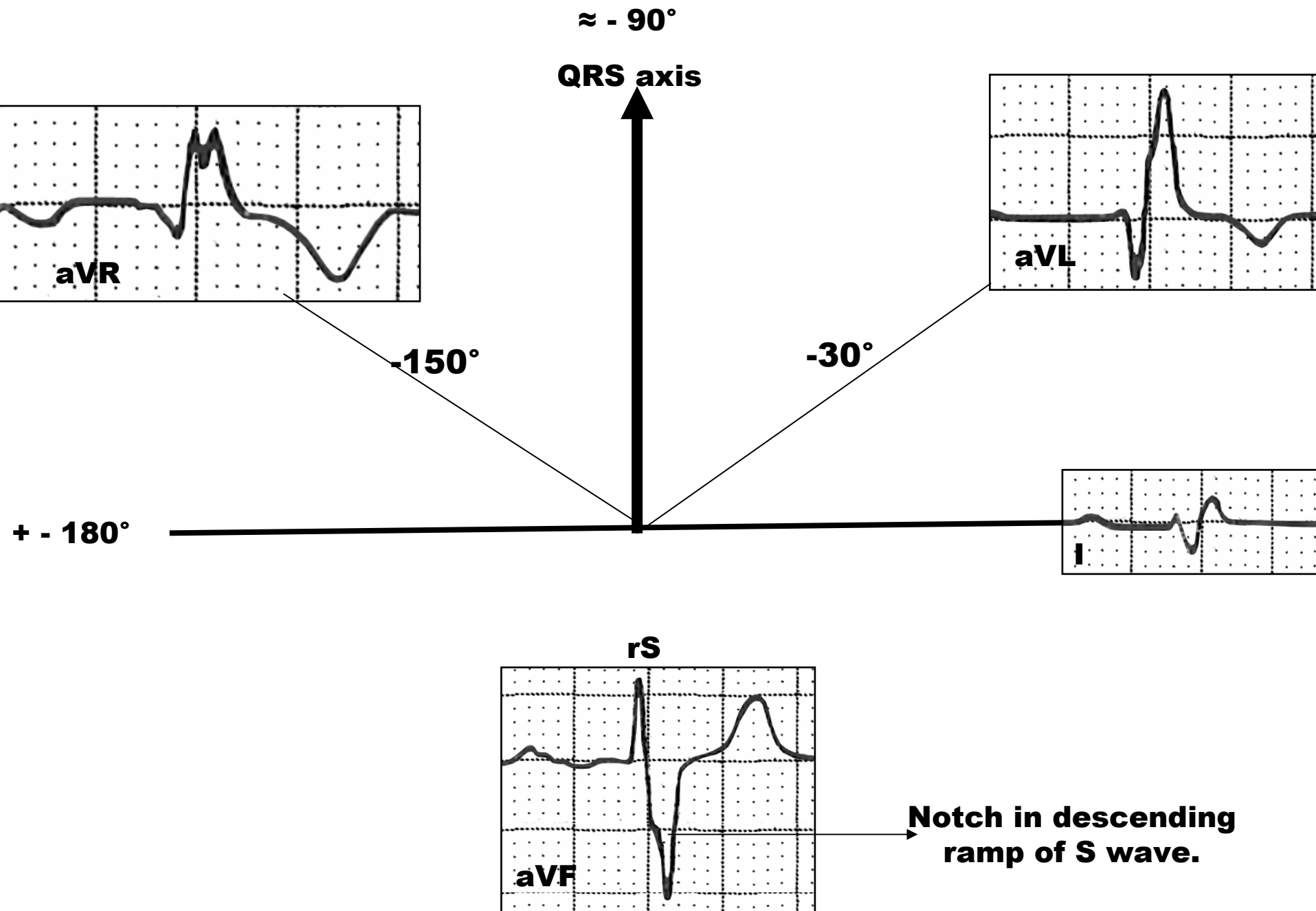
Conclusion:

- 1) Left Atrial Enlargement
- 2) First-degree AV block
- 3) Atypical complete LBBB: Absence of pure R wave in left leads I, aVL, V5 and V6 and classical LBBB pattern in right precordial leads: predominantly negative QRS complexes in right precordial leads: rS pattern and ST/T wave opposite to QRS complex with an angle near the 180°.
- 4) Extreme QRS superior deviation axis with Counter Clock Wise (CCW) rotation: pseudo Left Anterior Fascicular Block(LAFB)
- 5) Right ventricular hypertrophy: transition zone dislocated to left(rS pattern from V1 to V5, QRS axis in - 90°, qR pattern with prominent R final wave in unipolar aVR (RVOT).

1. **PROLONGED P DURATION (120ms):** RAE or some degree of inter atrial block
2. **PROLONGED PR INTERVAL (300ms):** First-degree AV block
3. **PROLONGED QRS DURATION (QRSd) = 140ms** Bundle Branch Block: Right? or Left BBB.



QRS axis localization on Frontal Plane



CLASSIFICATION CRITERIA FOR LBBB ACCORDING TO ELECTRICAL AXIS OF QRS COMPLEX IN THE FRONTAL PLANE

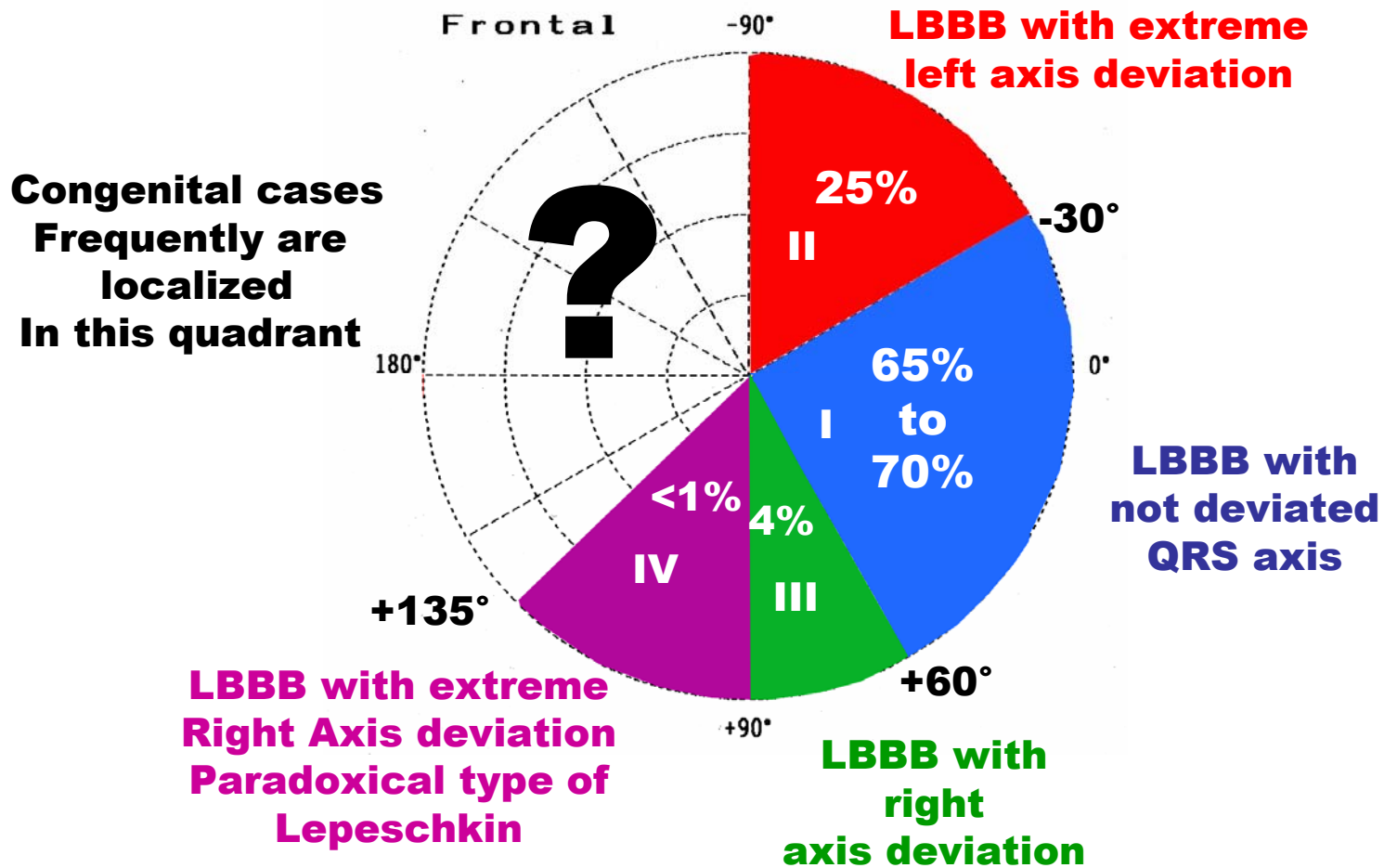
1. LBBB with QRS axis not deviated: between -30° and $+60^{\circ}$ ($\approx 65\%$ to 70% of cases)
2. LBBB with QRS axis with extreme deviation to the left: beyond -30° ($\approx 25\%$ of cases)
3. LBBB QRS axis deviated to the right: between $+60^{\circ}$ and $+90^{\circ}$ (≈ 3.5 a 5% of cases)
4. LBBB QRS axis with extreme deviation to the right: beyond $+90^{\circ}$ ($<$ than 1% of cases). It is named "paradoxical type of Lipeschkin".

The present case is between 3 or 4.

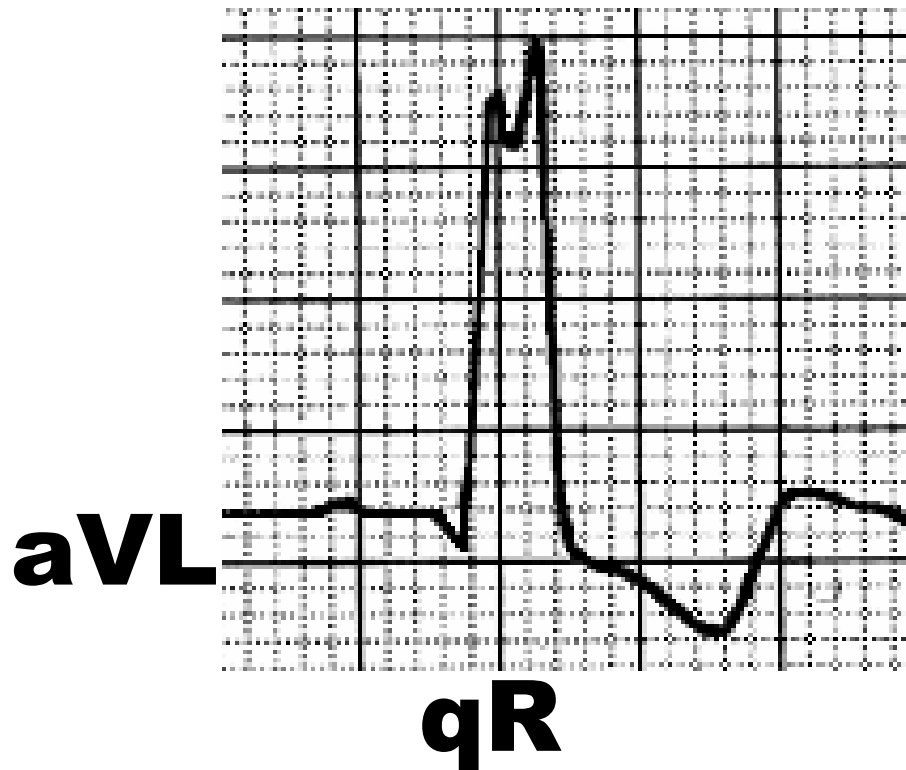
CAUSES OF PARADOXICAL COMPLETE LBBB

1. Fascicular Complete LBBB (LAFB + LPFB) with a higher degree of block in the posteroinferior fascicle.
2. Complete LBBB associated to right ventricular hypertrophy
3. Complete LBBB associated to lateral infarction(free wall of left ventricle)
4. Complete LBBB with accidental exchange of limb electrodes.

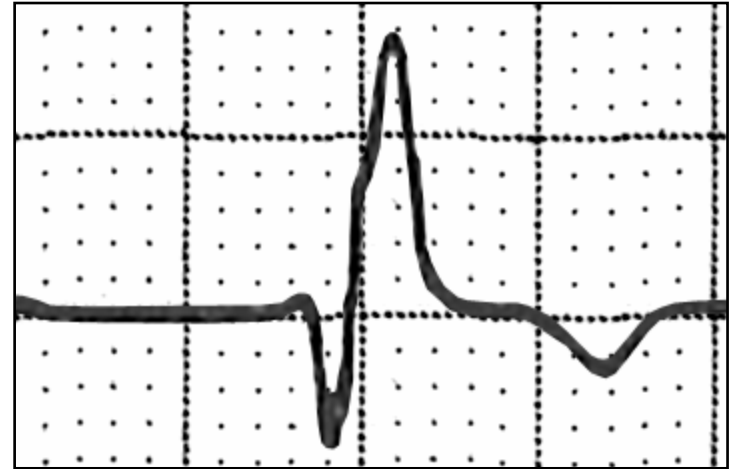
Complete LBBB Types According QRS Axis in the FP (Percentage of axis location)



NON-COMPLICATED LBBB



The present case has a:
rSR' pattern?
or
qR pattern?

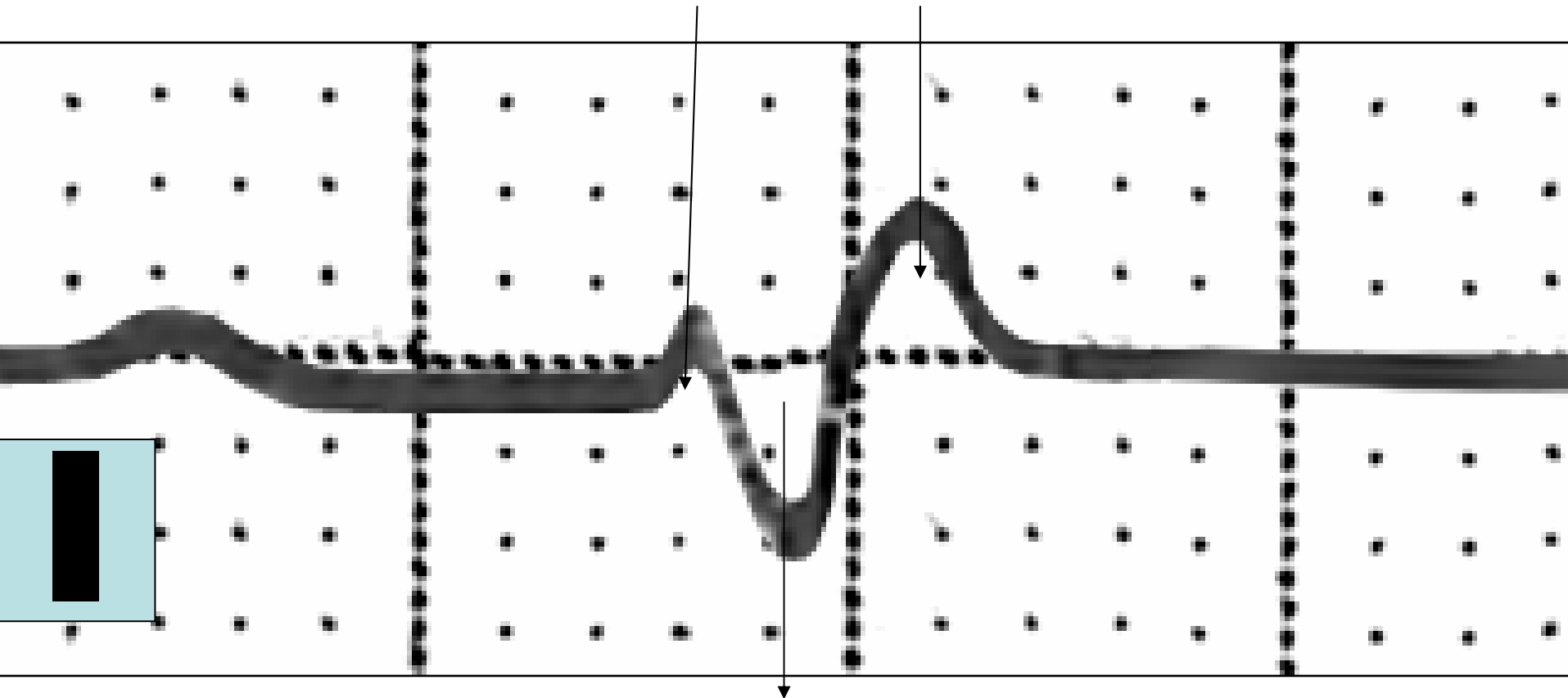


In Complete LBBB is characteristic the absence of initial q waves in leads I, V5 and V6, but in the lead aVL a q wave may be registered in the absence of myocardial electrically inactive area¹.

We think that in this case we have not a qR pattern in aVL. The pattern is rSR'. An embryonic initial r wave is recognized. According to Medrano, if the fibers of the septal fascicle (SF) originate proximally to the block of the LAF and LPF, the middle-septal activation is preserved (1AM), causing atypical CLBBB with q waves in left leads.

1. Spodick DH. Left bundle branch block is not equivalent to "absent septal q wave". Am Heart J. 2003 Sep;146(3):E9.

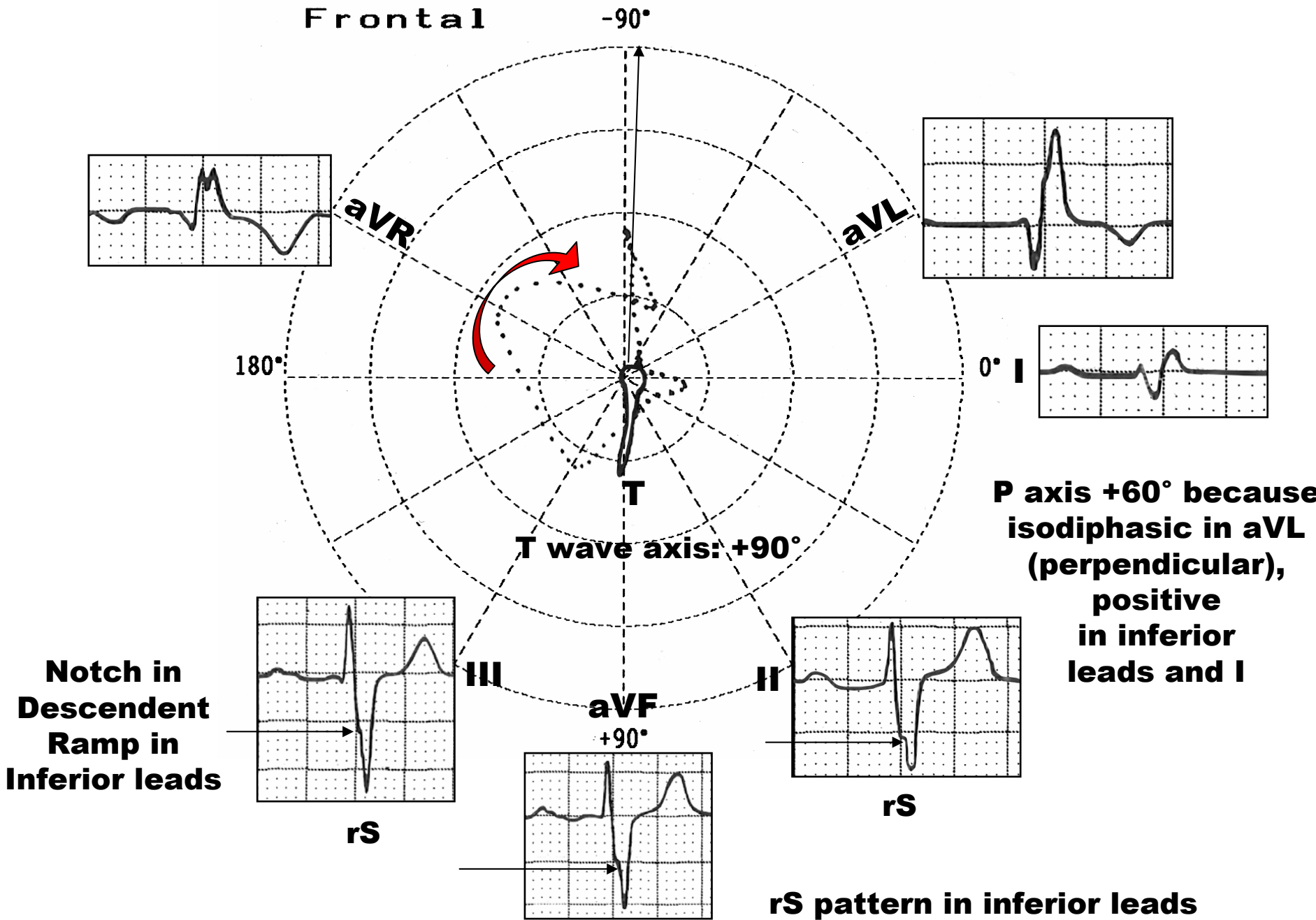
POSITIVES AREAS



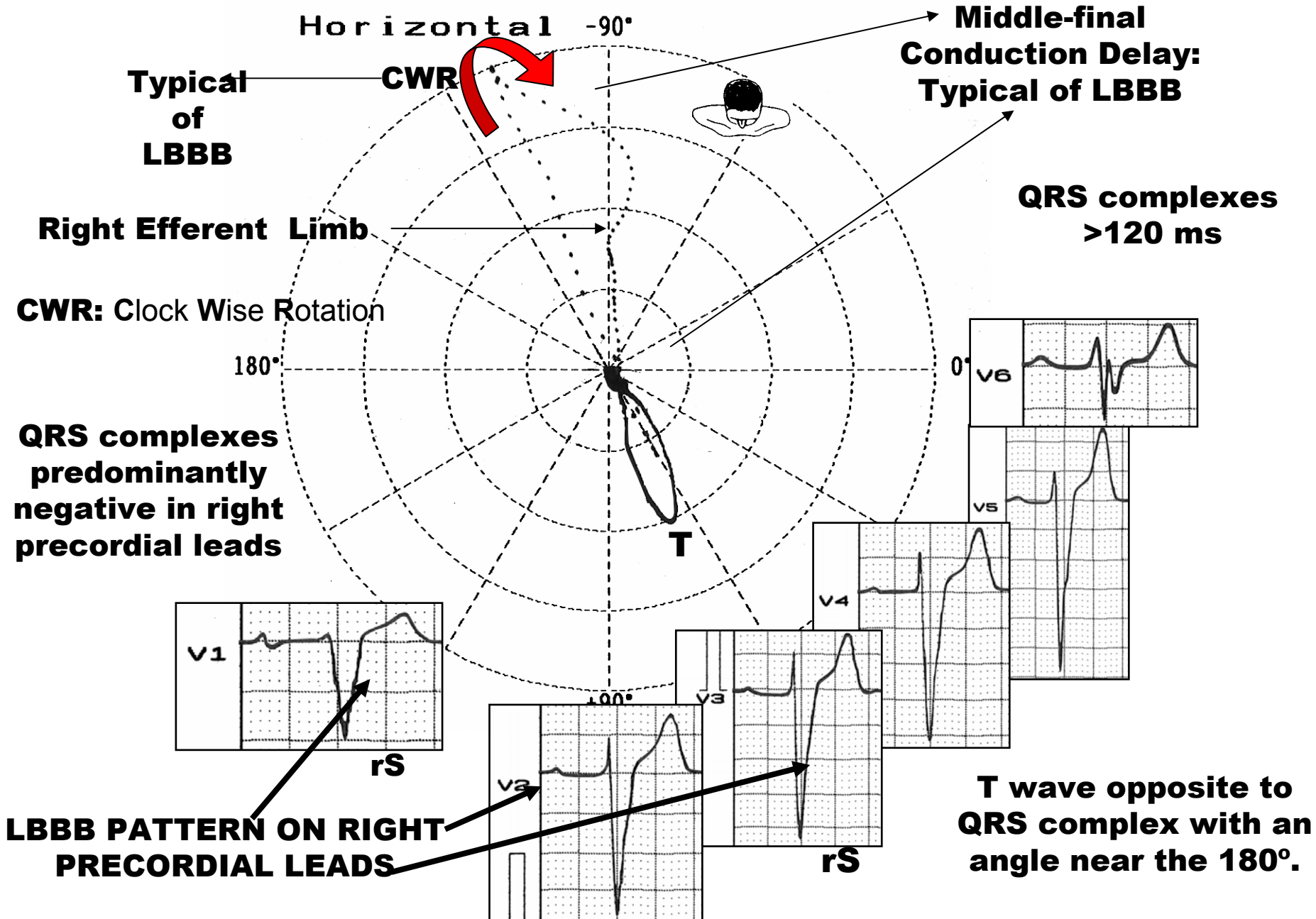
NEGATIVE AREA

QRS axis is perpendicular to I lead (or near) because the positive and negative areas of the QRS complex are equals (0°). Consequently, QRS axis is perpendicular to 0° ($+90^\circ$ or -90°). If QRS complex is negative in aVF, the QRS axis is located on -90° .

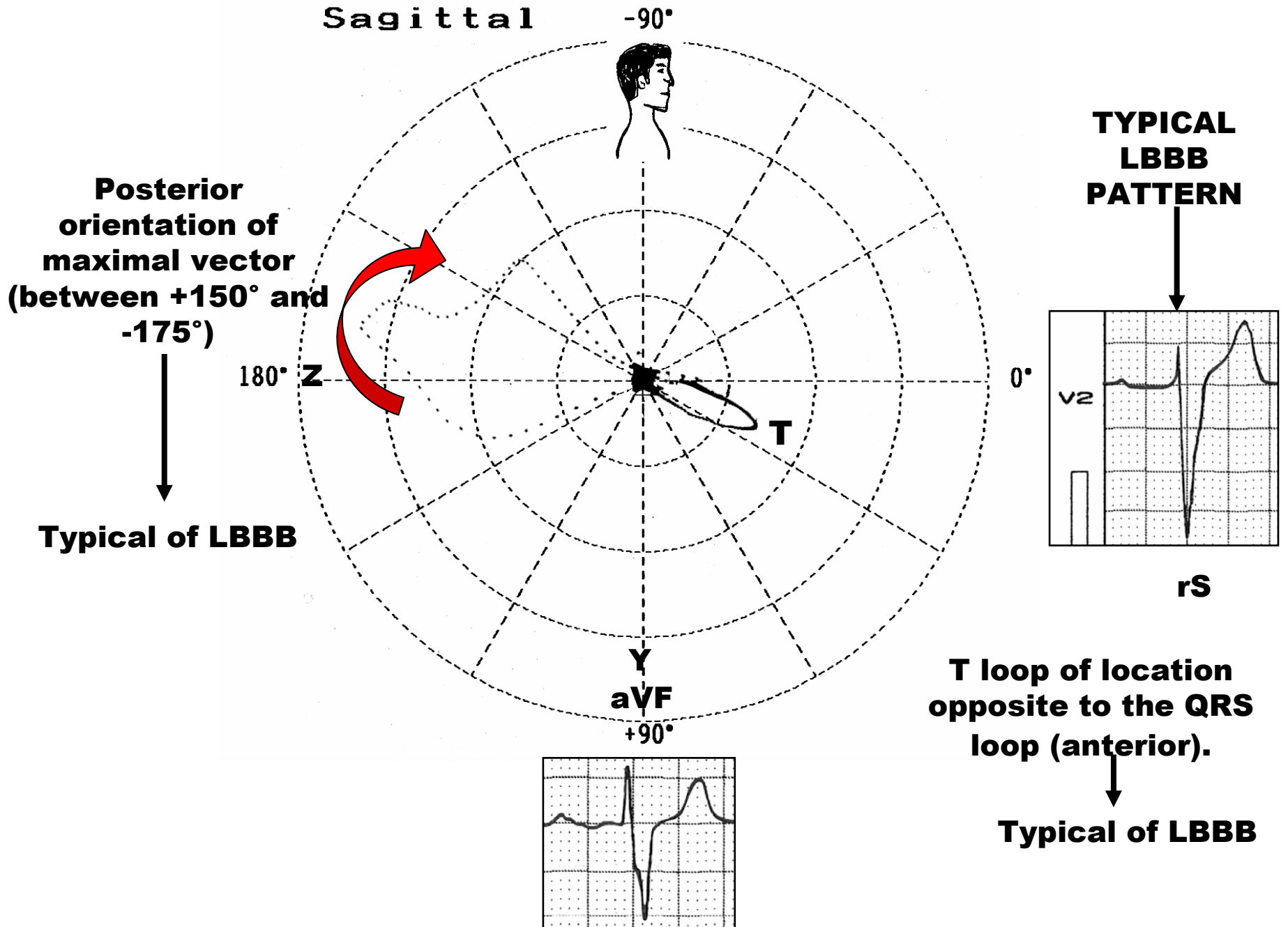
ECG/VCG CORRELATION FRONTAL PLANE



ECG/VCG CORRELATION HORIZONTAL PLANE



ECG/VCG CORRELATION RIGHT SAGITTAL PLANE



THE VCG IN UNCOMPLICATED LBBB HP

1. The initial 10 to 20 ms vector is directed to the left and to front
2. The magnitude of the max QRS vector is increased above normal exceeding 2mV
3. The main body of QRS loop is inscribed clockwise (CW) in HP: The QRS loop has a CW rotation
4. The QRS loop shape is elongated and narrow
5. The main body of the QRS loop is located on left posterior quadrant within the range -90° to -40°
6. Clear middle-final conduction delay of QRS loop is the hallmark.

THE VCG IN LBBB COMPLICATED WITH RVH IN HP

1. The initial 10 to 20 ms vector is directed to the right and to front
2. The magnitude of the max QRS vector is increased above normal exceeding 2mV
3. The main body of QRS loop is inscribed clockwise (CW) in HP
4. The QRS loop shape is elongated and narrow
5. The main body of the QRS loop is located on **right** posterior quadrant within the range **-90° to -140°**
6. Clear middle-final conduction delay of QRS loop is the hallmark.

1. Chou TC, Helm RA. The diagnosis of right Ventricular hypertrophy in the presence of left bundle branch block. In Proc. XI th International. VECTORCARDIOGRAPHY 2. Vectorcardiography Symposium on Vectorcardiography, held in New York and sponsored by The Long Island Jewish Medical Center, form 17-17May 1970. - North-Holland Publishing Company 1971; VECTORCARDIOGRAPHY 2. Section 4. pp: 289-296.

Defects commonly seen in Association with Complete Atrioventricular Septal Defect

- 1. Patent ductus arteriosus (PDA)**
- 2. Coarctation of the aorta**
- 3. Atrial septal defects(ASDs),**
- 4. Absent atrial septum**
- 5. Anomalous pulmonary venous return**
- 6. Anomalies of the aortic arch system**
- 7. Single papillary muscle (“parachute mitral valve”)**
- 8. Double orifice mitral valve**
- 9. Fallot’s Tetralogy (2.7-10% of cases). At least 75% of patients with Fallot’s Tetralogy and complete AVSD have Down syndrome.**

- 1. Shashi V, Berry MN, Covitz W. A combination of physical examination and ECG detects the majority of hemodynamically significant heart defects in neonates with Down syndrome. Am J Med Genet. 2002 Mar 15;108:205-208.**
- 2. Kuribayashi T. Persistent common atrioventricular canal of the complete form associated with anomalies of the aortic arch system in WKY/NCrj rat fetuses. Jpn Circ J. 1994 Sep;58:720-726**
- 3. Brancaccio G, Michielon G, Filippelli S, Perri G, Di Carlo D, Iorio FS, Oricchio G, Iacobelli R, Amodeo A, Di Donato RM. Transannular patching is a valid alternative for tetralogy of Fallot and complete atrioventricular septal defect repair. J Thorac Cardiovasc Surg. 2009 Apr;137:919-23.**

Anatomical Types of Atrioventricular Septal Defect

Others denominations: Endocardial Cushion Defect or AV canal defects.

Prevalence: 4,5% of congenital heart diseases.

1. Partial Atrioventricular Canal Defect or Partial AVSD:

- Isolated Ostium of Primum Atrial Septal Defect (OP-ASD)
- Ostium Primum Atrial Septal Defect with Cleft Mitral Valve
- Ostium Primum Atrial Septal Defect with Cleft Mitral and Tricuspid Valve
- Common atrium and Cleft Mitral valve

2. Complete atrioventricular septal defect (complete AVSD) Common Atrioventricular Canal, or Atriventricularis Communis

- Contiguous primum ASD
- Nonrestrictive VSD
- Common AV valve

Rastelli type A

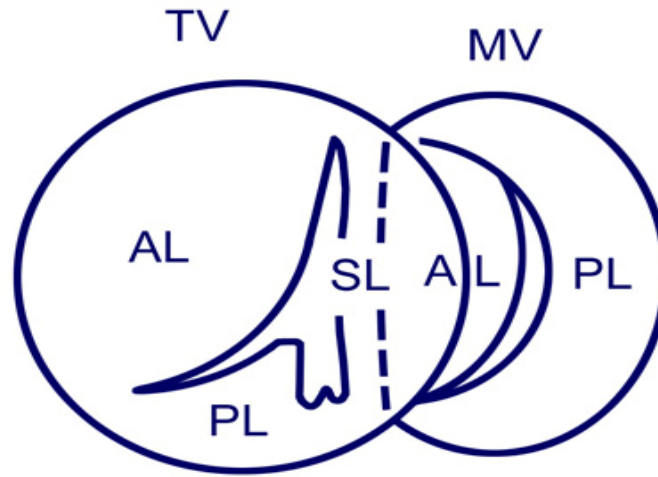
Rastelli type B

Rastelli type C

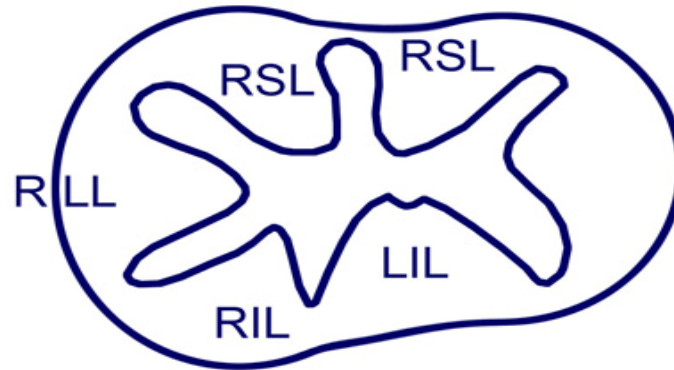
Rastelli type A valve (I), the anterior leaflet is divided into 2 portions of approximately equal size. The lateral portions of this leaflet attach to the anterior papillary muscles in each ventricle.

Chordae tendineae attach the medial portion of this leaflet to the crest of the ventricular septum or slightly to the right side.

Interventricular communication may occur between the anterior and posterior bridging leaflets and underneath the anterior leaflet in the interchordal spaces.



A. Normal valves



I "Rastelli A" Complete common A-V canal

Rastelli type B valves: the rarest type, the anterior bridging leaflet is divided but overhangs the ventricular septum more so than in type A valves. The chordae from the medial portion of the divided anterior leaflet have no direct insertion to the ventricular septum but rather insert onto an anomalous papillary muscle positioned in the right ventricle near the ventricular septum. Because of the lack of chordal insertions to the septum, free interventricular communication occurs beneath the anterior leaflet.

Rastelli type C valve: the anterior bridging leaflet is larger and overhangs the septum more so than with a type A and type B valves. It is not attached in its mid portion to the ventricular septum or elsewhere and is referred to as being "free floating." Free interventricular communication also occurs underneath this valve leaflet.

Because of the deficient atrioventricular septum, the atrioventricular valves are displaced apically. The left ventricular inlet distance (distance from mitral valve annulus to apex) is shorter than the outlet distance (apex to aortic valve annulus). In the normal heart, these distances are nearly equal. In addition, the left ventricular outflow tract (LVOT) is displaced anteriorly, as opposed to wedged between the 2 atrioventricular valves. These features lead to the characteristic "gooseneck" deformity seen on anteroposterior angiography. Although this leads to a LVOT diameter that is smaller than normal, it usually does not cause clinically significant obstruction by itself. However, contribute to an LVOT obstruction when associated with a subaortic membrane or accessory atrioventricular valve tissue.

Colleagues and friends Commentaries

Potro: Como el libro ya lo tengo (y con tu hermana me entretengo!....dirian los chicos de mi barrio en Flores); y ademas mi conocimiento de VCG es casi nulo (solo me puedo ayudar con su libro que ahora esta en la oficina), y cierta impunidad que me brinda ya haber cenado con alguna copa de buen vino, digo lo que me parece, que esta mal (lo se a priori), y asi le doy .la oportunidad a Ud que nos desasne: 1. Ritmo sinusal; 2. Bloqueo AV de 1 grado. Cuando el PR se encuentra a mitad de camino de RR, los diagnosticos diferenciales son: a. Bloqueo AV de primer grado; y b. Taquicardia por reentrada intranodal con conduccion 2:1 (en este caso la "segunda P" se mete al final del QRS y puede pasar inadvertida). Pero en este caso, creo que se trata de Bloqueo AV de 1 grado. Lo que sigue es mas dificil: 3. El eje electrico esta casi en terreno de indeterminado (tanto DI como aVF son isodifasicas, pero aVF es ligeramente mas negativa que positiva, llevando el eje necesariamente a la izquierda ; 4. V1 morfologia de BCRI; 5. Onda S en DIII > DII, con Q inicial en aVL y R terminal en aVR, prsistencia de S en V5 y V6, todo indicacion de LAFB. Pero claro, el eje (acorde a las enseñanzas de Don Mauricio) debiera estar en -45 por lo menos. Y claramente no lo esta. Y creo que es aqui donde Ud va a enseñarme porque.MI especulacion (pero no se VCG, lo siento maestro) es que algun grado de bloqueo: a. Parietal, b. de alguna division de la rama derecha (la S de V5 V6 puede ser por LAFB o por rama derecha) produce una "compensacion del devio del eje". Pido perdón por lo arcaico de mi explicación. Rosenbaum hablaba de BCRI tipo hemibloqueo anterior. Pero en este caso hay algo mas, como dije, tal vez vinculado a la rama derecha, o a bloqueo parietal, que no permite que eje se vaya completamente a izquierda.

Paro aqui, y escucho, para aprender.

Gracias por este hermoso caso!!!

PS: espero no haber sido muy lacónico. Como no se quiere decir, en el barrio de Flores le responderiamos:

- Eso seras vos, atorrante!!!

AB

Dr. Adail Paixão Analysis from Bahia Brazil

Dear Mr. Mustang:

I have your precious and autographed book but if I win and in our list behave a Haiti's colleague we will send it for him or her.

ECG diagnostic: ATYPICAL ECG AFTER LATE POST SURGERY CORRECTION OF OSTIUM PRIMUM ATRIAL SEPTAL DEFECT WITH MITRAL VALVE CLEFT

Rhythm: regular sinus;

HR= 58 bpm;

P wave length: = 0,12 (D2,D3, aVR e aVF); $\hat{S}AP$ = P electrical axis in frontal plane + 60°;

PR = 0,28;

$\hat{S}AQRS$: NO ONE LAND ? 180° \leftrightarrow 270° 0U -90° \leftrightarrow -180° (R in aVR and tall qR in AVL) but very difficult localization.

QRSd = 0,13;

$\hat{S}AT$ = + 90°

QT = 0,40 **QTc** = 0,41s

Conclusion:

1. First-grade AV block
2. CRBBB.
3. LSFB (qS em aVL - faltou em D1 - rS in inferior leads and SD3>SD2)
4. TRIFASCICULAR BLOCK
5. Right And Left Atria Enlargement: RAE + LVE
6. Right ventricle enlargement (RVE).

Adail Paixão - Bahia - Brazil

Portuguese

Prezado Professor Pérez Riera, El Potro ou Mr. Mustang:

Já tenho seu livro devidamente autografado, mas acertando e ganhando, se houver no nosso Foro algum colega do Haiti, enviaremos para ele.

Aqui vai o Laudo:

ECG Atípico em Pós-operatório tardio de CIA tipo ostium primum e fenda mitral. Fluxo alto 2:1 provavelmente irá novamente a cirurgia.

Ritmo Sinusal Regular

Frequencia Cardíca = 58 bpm

Duração:

P = 0,12(D2,D3, aVR e aVF)

QRS = 0,13

PR = 0,28

QT = 0,40 QTc = 0,41

Eixos elétricos no plano frontal :

SÂP = 60°

SÃQRS = NO ONE LAND 180°<->270° OU -90<->-180° (R PURO EM AVR E R ALTO EM AVL) DE DIFÍCIL LOCALIZAÇÃO

SÂT = 90°

LAUDO = 1. BAV 1° GRAU 2. BLOQUEIO COMPLETO DO RAMO DIREITO 3. BLOQUEIO DIVISIONAL DO RAMO SEPTAL ESQUERDO(qS em D1,aVL, RS em derivações inferiores e sD3>sD2) BLOQUEIO TRIFASCICULAR 4. SOBRECARGA BIATRIAL 5. SOBRECARGA DE VENTRÍCULO DIREITO

Estimado Andrés este es mi análisis:

Ritmo sinusal a 75 lpm con PR de 0,30 sg. (DII)

Eje de P en 60°. No criterios ECG para CAD o CAI. Activación auricular: de derecha a izquierda y hacia delante y más a la izquierda de lo habitual.

Eje de la 1° parte del QRS desviado a la derecha y de la 2ª hiperdesviado a la izquierda con fuerzas terminales dirigidas hacia atrás.

Patrón SI, SII, SIII en plano frontal.

Morfología rS en precordiales.

Conclusión: Varón 42 años con ritmo sinusal Bloqueo AV de primer grado con crecimiento ventricular derecho y bloqueo periférico derecho superoanterior.

Un saludo,

Javier García Niebla

Dear Andrés: This is my analysis

Sinus rhythm, HR 75bpm, PR interval: 0,30sg(DII); P axis +60°,without ECG criteria of RAE or LAE. Atrial activation from right to left and to front. More to left than normally. First portion of QRS axis deviated to right and the second one with extreme deviation to left. Final forces directed to back.

rS pattern across precordial leads.

Conclusion: man, 43 years old, in sinus rhythm, first-degree AV block, RVH and peripheral anterior superior bundle branch block.

Sincerely

Javier García Niebla

Querido ANDRES a pesar que me rechazaron mi ultimo comentario sobre infarto agudo en presencia de BRI , me dieron una insinuacion que deje de hinchar con mi experiencia e;lectrocardiográfica ,que parece ser irrelevante para los grandes especialitas del forum,y decidi no meterme mas en esto.

Despite that my last analisis about acute myocardial infarction In on top of CLBBB, I Tough that my analisis was irrelevant for the high qualified Electrocardiology, Then I Got Themessage , and decided not to take part in the very interested disscusions.

But I decided to comment this Interesting case

Primeramente el bloqueo de primer grado es muy probably que sea infranodal , hisiano y no bloqueo bilateral, este bloqueo probablemente es quirurgico

The first-degree A-V block is infranodal (His Block) most probably surgical block Not Bilateral BBBB.

**La depolarization intraventricular es muy lenta ,dando una imagen parecida al BCRI
The intraventricular conduction is very slow mimicking a CLBBB**

Pero la onda Q en aVL y las S en las derivaciones derechas excluyen CLBB, yo a este fenómeno le llamo ATYPICAL LBBB

But the deep Q waves S in aVL and deep In V4,V6 Excluded.

1. Onda P aumento de su duracion 0,12 seg, en DII. DIII y V1 impresiona un aumento del voltaje de la onda P compatible con crecimiento auricular derecho. En V1 a pesar del aumento del voltaje de la onda P derecha se observa la onda auricular izquierda. Dada lo prolongado de la onda P y aumento de voltajes de ambas. Dilatacion biaricular a predominio derecho. 2. BAV de primer grado PR 0,28 seg.; 3. Desviacion del eje a la extrema izquierda por onda "q" en DI ó aVL (coexiste un hemibloqueo anterior izquierdo). ;4. La duracion del QRS se encuentra aumentada > 0,12 seg, en una primer observacion impresiona BCRI, pero en las precordiales conserva una una R en V1 a V3 que no concuerda con un BCRI. Impresiona un defecto de la conduccion intraventricular de alto grado, tiene rR en aVR, y en precordiales izquierdas un final del onda S empastado. Me inclino por un defecto de la conduccion intraventricular. En esto aguardo la explicacion de los especialistas acerca de porque si es un BCRI persisten R de V1 a V3 pronunciadas? 5. QT 0,42. Por el antecedente citado de CIA operada, con un shunt residual 2:1. En la presentacion no refirió la presion pulmonar. Pero por el antecedente de CIA operada tipo ostium primun a la edad que fue operado, interpreto fue por presencia de sintomas, y refiere dilatacion de ambas cavidades lo que sugiere compromiso de ambos ventriculos por su cardiopatía estructural. No refiere si el shunt persiste de izq a derecha o tiene inversion del mismo. Y por lo referido interpreto la correccion de su CIA, no revirtio la progresion de su miocardiopatía.

Padece una miocardiopatía, chagastica? supongo ya la han descartado por serologia, y tiene coronarias angiograficamente normales, lo que descarta el origen isquemico.

Me impresiona que a pesar del cierre de su CIA, su miocardiopatía ha progresado. Alguna otra explicacion para su miocardiopatía biventricular? Mi impresion diagnostica es progresion de miocardiopatía por severa sobrecarga biventricular por su CIA. Hipertension pulmonar asociada (el segundo ruido no tiene variacion respiratoria).

Saludos al foro

Martin

Me atrevo a responderle al maestro Perez Riera

Consigo un ECG con **RS /72-74 x`/0.29" / 0.16" medido en precordiales /0.43"/ aQRS indeterminado pero a la izq y posterior /**

Dx : trazo con evidencias de **BAV 1er Gdo con BSAIHH** con evidencias de **sobrecarga de volumen del VD** de mostrada en el exámen clínico con un **LSPEI** amplio con que permite un desdoblamiento amplio del **2R** a la auscultación y sumado a esto veo caída de relación de **R/S** en precordiales y de acuerdo con el **Dr Baranchuk** en que existe una morfología de onda que deforma la **S** de los **QRS de D2 ,D3 y aVF** que parece una **onda P retrógrada** que podría entonces poner de manifiesto una **DVN** con **PR largo y RP`corto** .

Saludos y si me gano el libro, tendrá un puesto de honor en mi biblioteca, pero igualmente deseo la dedicatoria con la firma del autor

Dr Mauricio Rondón

Sección de Electrofisiología y Marcapasos

Servicio de Cardiología - HUC

Jefe de Emergencia del HUC

CI: 3.922.713 MSAS: 15.991

Telef: 0414-1000298