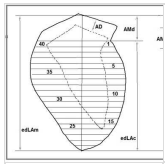

Version 2

Feb 01, 2021

Left Ventricle Contraction Curves V.2

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1 Works for me dx.doi.org/10.17504/protocols.io.brwfm7bn

Wall Motion Analysis Giorgio Bozzi 1 more workspace

Giorgio Bozzi

ABSTRACT

The folder LVOBJEVL.zip contains the LeftVentricle.exe file and the KLVG directory with service files. Unzip the folder.

LeftVentricle.exe Program

The LeftVentricle.exe is an example program that requires the use of a graphics tablet for data input. I suggest a Wacom Intuos Pro L or Calcomp Drawing Board III graphics tablet. Some examples are available for those without a graphics tablet.

The heart, accelerating two masses of blood, must submit to the laws of dynamics. The contraction causes a shortening of the heart, and blood expulsion causes a lowering of the organ by the third principle of dynamics. Since shortening equals lowering, cardiac activity is balanced. Therefore, people do not perceive cardiac contraction despite the intensity of the force developed.

Left ventricular angiography allows measuring systolic aortic plane lowering, but the projective method alters some values. The most significant approximation concerns the longitudinal axes of the cavity. During diastole, ventricular anatomic axis and angiographic longitudinal axis coincide. No in systole because the cardiac apex remains stationary, whereas the angiographic axis shortens and rises. For this reason, a functional coincidence, we superimpose the end-diastolic and end-systolic longitudinal axes for calculations.

Read Guidelines

Finally, click "Calculations" on the strip menu.

THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

Giorgio Bozzi, MD, Edoardo Verna, MD, Joan M. Skinner, RN, Mary-Lynn Dwyer, RN, and Mario Castelfranco, MD. Quantitative Regional Contraction Analysis of Cineventriculography: Reporting, Filing, and Retrieval Functions Using a Personal Computer. Cathet Cardiovas Diagn 18:50-59 (1989)

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WHAT'S NEW

The algorithm assesses cardiac contraction using only two silhouettes as the angiographer does while watching the movie.

CREATED

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LAST MODIFIED

Feb 01, 2021

OWNERSHIP HISTORY

Jan 28, 2021 Lenny Teytelman protocols.io

Jan 28, 2021 Giorgio Bozzi

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GUIDELINES

Operative Description.
RAO projection
1) Fix a glossy on the screen.
2) Slide the movie back and forth to identify the cavity longitudinal axis that you will then draw on the end-diastolic (ED) and end-systolic (ES) silhouettes.
3) Freeze the image with the ED silhouette and trace the edges on the transparency with a marker. Accurately identify the aortic plane.
4) Freeze the image with the ES silhouette and trace the margins precisely without moving the transparency. This allows accurately measure the lowering of the aortic plane.
5) Detach the transparency from the screen and draw the chosen longitudinal axes during the movement.
6) Put the transparency on the graphic tablet by positioning the longitudinal axis ED vertically (tolerance 5 mm).
7) Click with the stylus on the extremes of the ED axis.
8) Click on the aortic ED and ES plane, choosing an average distance.
9) Click on the point from which you want to start the area calculations. You can choose on the left of the axis (mitral part) or the right (outflow tract).
10) Click at the top right of the axis on the edge of the ED silhouette, then raise the stylus 4 -5 mm and slide the edge slowly until you pass the cardiac apex. A sound signals the apex passing. Do not click but pass the apex from right to left.
11) Repeat the operation for the left side of the silhouette.
12) Rotate the foil and superimpose the ES axis with the ED. The algorithm corrects small errors in the vertical direction.
13) Trace the edges of the ES silhouette in the same way.
Finally, click "Calculations" on the menu strip at the top and select the option you want.

LAO projection
In the LAO projection, the contraction has a concentric pattern, and the algorithm performs calculations on angular areas. The user has to observe the contraction pattern by sliding the film back and forth and chooses the center of contraction in ED and ES.
Based on the algorithmic tests, the user chooses the vertical axis of the ED silhouette. The algorithm calculates the midpoint of this axis as the center of the cavity. Then the user draws the vertical axis of the ES silhouette, superimposes it on the ED axis, and clicks the chosen point as the center of the contraction.
1) Fix the gloss on the screen.
2) While observing the motion, choose the center of the ED and ES silhouettes.
3) Click the extremes of the ED vertical axis.
4) Click on the upper silhouette edge a little to the right of the vertical axis, then lift the stylus a few mm and slide the right edge until it crosses the lower end of the vertical axis.
5) Same for the left margin.
6) Superimpose the vertical axis ES on the ED.Click on the axis extremes, and click on the point you have chosen as the contraction center during the movement.
7) Draw the left and right margins of the ES silhouette as you did for the ED.

MATERIALS TEXT

Programs are written in Visual Studio 2005.
Windows 7 or later Operating System.
RAM 8 MB
Screen 24' Resolution: 1280; 768
Color Printer, paper size A4
Graphics tablet Wacom Intuos Pro

1 This Zip LVOBJEVL contains LeftVentricle.exe and a service DIR KLVG. **00:00:00** **LVOBJEVL.zip**

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