DESIGNED AND MANUFACTURED IN EUROPE

Culprit Coronary Artery Algorithm (CCAA)

Culprit Artery Algorithm: Because time matters

SCHILLER

The Art of Diagnostics

SCHILLER CCAA

Software that helps correctly identify the site of obstruction in the coronary artery

SCHILLER CCAA points the way to the optimal treatment of acute chest pain, benefiting the patient and ensuring best use of hospital facilities.

Our objective

- to use the ECG to determine the size of the cardiac area at risk by localizing the occlusion site in the coronary artery
- provide clinical data to shorten the time interval between onset of chest pain and restoration of myocardial blood flow

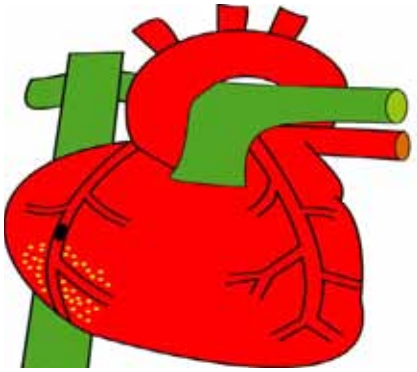
The need

- shorten the time interval between onset of pain and medical attention
- accurate and quick decision-making using the standard 12-lead ECG

Our new approach

- Uses the ST-segment deviation direction of 12 ECG leads to indicate the site of occlusion in the culprit artery
- That information is combined with other ECG findings and a limited number of questions
- A software algorithm including a decision tree provides suggestions about the preferred therapy

The Challenge



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                    I     II    III   AVR   AVL    AV
ST Values(uV) :   -28   -100   -73    65    22    -8
ST Values(mm) :   0.3   -1.0   0.7   0.7   0.2    0.
ST Score (mm) :   6.8

Score table   :     I    II   III    AVR   AVL    AV
Left main     :     1     1     1     1     0
LAD Prox      :     1     1     1     1     1
LAD Dist      :     1     0     1     0     1
RCA Prox      :     1     0     0     0     1
RCA Dist      :     1     0     0     0     1
Cx            :     1     0     1     0     1
3V/LM Nar.    :     1     1     1     1     0

Previous MI, CA Bypass or Stenting      :  YES
Time interval onset chest pain and ECG  :  1.5 h]
QRS width                               :   82 ms]
ST Score                                :  6.8 mm]

Occlusion Site:
- LAD Prox

Advice:
- PCI Center
- Consider thrombolytic therapy if PCI centre is fur
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In the US approximately 40 % of all deaths are caused by cardiovascular disease.
A decision about the correct treatment of the patient with acute chest pain can be made, while outside hospital by the ambulance personnel, in the hospital emergency room, or at home by the general practitioner.

Crucial time is lost in risk stratifying patients with acute chest pain

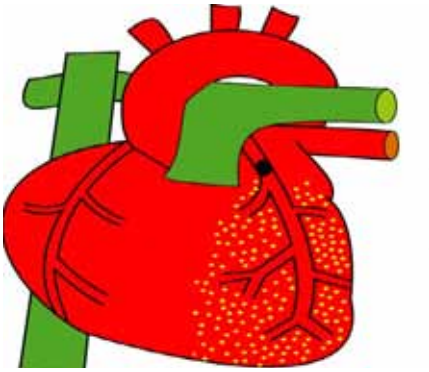
In many countries the number of hospitals where a percutaneous coronary intervention (PCI) can be performed is limited. This stresses the necessity of rapidly determining which patient should be brought to such a hospital.

The optional SCHILLER CCAA software, developed by Professor Hein Wellens and implemented in our ECG machines, allows the identification of the site of obstruction in the coronary artery.
This revolutionary algorithm points the way to the optimal treatment of acute chest pain, benefiting the patient, staff and hospital.

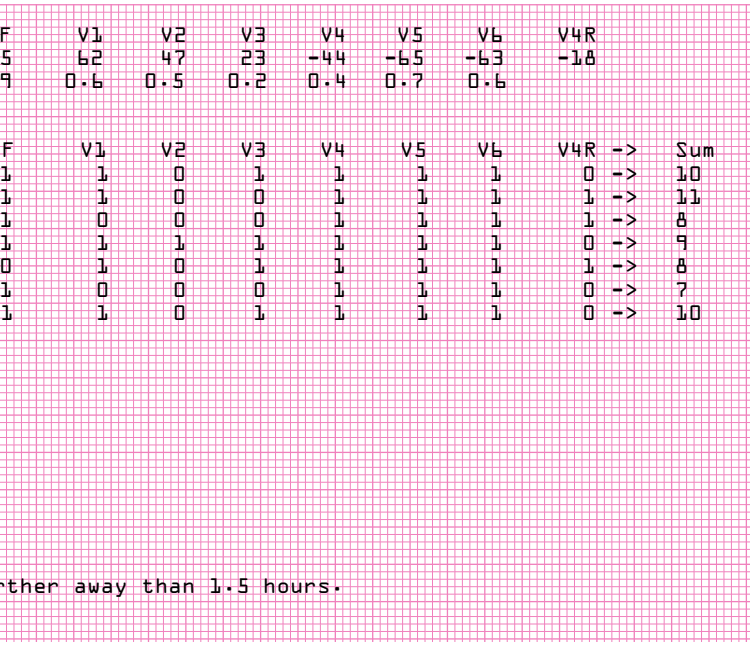
Effectively use the 12-lead ECG to optimize diagnosis and management of the patients with acute chest pain

12-lead ECG recording with lead V4R instead of lead V4. Lead V4R is a very helpful lead in infero-posterior myocardial infarction to distinguish between a coronary occlusion site proximal or distal in the right coronary artery, or in the circumflex coronary artery.

It has been shown that the ST-segment



The closer the occlusion site to the origin of the coronary artery, the larger the size of the area at risk



F	V1	V2	V3	V4	V5	V6	V4R
5	62	47	23	-44	-65	-63	-18
9	0.6	0.5	0.2	0.4	0.7	0.6	

F	V1	V2	V3	V4	V5	V6	V4R ->	Sum
1	1	0	1	1	1	1	0 ->	10
1	1	0	0	1	1	1	1 ->	11
1	0	0	0	1	1	1	1 ->	8
1	1	1	1	1	1	1	0 ->	9
0	1	0	1	1	1	1	1 ->	8
1	0	0	0	1	1	1	0 ->	7
1	1	0	1	1	1	1	0 ->	10

ther away than 1.5 hours.

SCHILLER CCAA

Helps ensure a correct treatment decision

Essential for correct 12-lead ECG interpretation and conformation of STEMI events

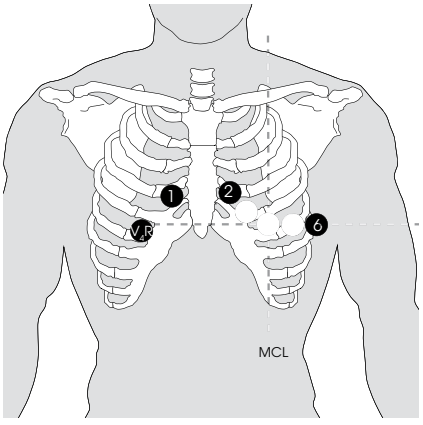
- Correct ECG lead positioning
- No artifacts
- Localization of the ischemic area with accurate determination of site and size of the coronary occlusion
- Identification of other ECG and non-ECG risk factors

Benefits of the SCHILLER CCAA algorithm

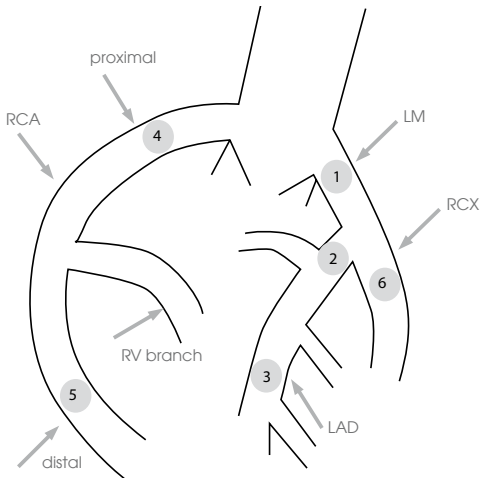
- Saving lives
- Shortens hospital stay and transport costs
- Cost-effective, quick pre-hospital decision-making regarding next treatment steps
- Appropriate selection and triage of patients requiring intra-coronary intervention / thrombolysis
- Reducing the duration and size of the myocardial infarction and damage to the heart muscle

Literature: Meissner A, Trappe H-J, de Boer M-J, Gorgels AP, Wellens HJ. «The value of the ECG for decision-making at first medical contact in the patient with acute chest pain». Neth Heart J. 2010;18:301-306

behavior of lead V4 can be derived by averaging the ST-segment deviation of leads V3 and V5.
Correct placement of lead V4R as indicated in the figure below. It is used in the Wellens algorithm for added efficacy .
The algorithm indicates the location of the different occlusion sites in the coronary artery as shown in the diagram below.



RCA: Right Coronary artery
RV branch: Right Ventricular
LM: Left Main
RCX: Ramus Circumflexus
LAD: Left Anterior Descending



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