Index

accelerated idioventricular rhythm (AIVR), 232
ACS. See acute coronary syndromes
acute aortic syndrome, 204
acute coronary syndromes (ACS), 19, 22, 37–8
acute phase of, 28
arrhythmias in, 250–7
chest pain in, 199
classic, 197
defining, 197
differential diagnosis, 201, 202
ECG of
other abnormalities in, 243–4
patterns, 211
intraventricular blocks in, 250–7
non-atherothrombosis, 265–73
NSTE, 37, 233–42
ECG patterns in, 211, 238
flattened or negative T wave in, 239–40
incidence of, 214
with normal ECG, 240–2
prognostic implications of, 239–40
STE v., 210, 216
typical patterns of, 210–14
pathophysiology of, 209–14
recurrent, 242–3
risk stratification in, 257
high risk groups, 260–3
intermediate risk groups, 265
low risk groups, 263–5
silent ischaemia in, 302
STE, 38, 64, 75, 214–33
incidence of, 214
inferolateral zone, 223
LAD occlusion and, 71, 73, 76, 77, 78, 81, 85
LCX occlusion and, 92, 97
in multivessel occlusion, 233
NSTE v., 213, 215
OM branch occlusion and, 94
pre-PCI, 84
RCA occlusion and, 82, 91, 104
subacute, 79
typical patterns of, 210–14
with wide QRS, 247–50
prognostic considerations, 248–50
acute mitral regurgitation, 246–7
AIDS, 274, 301
AIVR. See accelerated idioventricular rhythm
alcoholism, 42
negative T waves and, 53
Aldrich score, 224
amiodarone, 53
anaphylactic crisis, 274
Anderson-Wilkins score, 221
anemia, 274, 300
acute, 300
chronic, 300
angina
classic exertional, 207, 297–8
ECG in, 297–8
heart rate in, 299
ST segment changes in, 298
increscendo, 122
Prinzmetal, 221, 226, 271–3
secondary to tachyarrhythmia, 266
unstable, 46, 47, 197, 209, 233–42
antero inferior infarction, 144
anteroseptal infarction, 282
LAD occlusion, 71
anteroseptal zone, 18, 24, 71, 137, 166
ECG limitations and, 23
aortic ulcer, 204
apical-anterior infarction, 143, 171
ECG pattern of, 148, 151
false impression of, 148
pacemakers and, 194
arrhythmias, 244, 262, 288. See also bradyarrhythmias
in ACS, 250–7
paroxysmal, 52, 53
supraventricular, 252–4
ventricular, 250–2
arrhythmogenic right ventricular dysplasia (ARVD), 109, 114
ARVD. See arrhythmogenic right ventricular dysplasia
atherothrombosis, 197, 206–7
atrial fibrillation, 253–4
atrial flutter, 253
atrial infarction, 293–5
atrial wave changes, 288
AV blocks, 254–5
first degree, 254
second degree, 254
AV node, 18
bifascicular block, 250
bradyarrhythmias, 254–7
sinus, 254
Brugada’s syndrome, 108, 109, 113
bull’s-eye view, 307
bundle branch blocks. See left bundle branch block; right bundle branch blocks
Cabrera’s sign, 180
carbon monoxide, 274, 301
cardiac rupture, 244, 245, 262
cardiac surgery, 269–70
cardiomyopathy
dilated, 199
ECGs of, 304
hypertrophic, 172, 199
cardiovascular magnetic resonance (CMR), 3, 4, 10, 11, 14, 275, 287
contrast-enhanced, 4–5
of double infarctions, 171
gadolinium-enhanced, 137
of heart walls and segmentation, 5–15
in MI, 20
role of, 8
CE-CMR. See contrast-enhanced CMR
CHD. See coronary heart disease
chest pain
in ACS, 199
of doubtful origin, 204–6
diagnosis in, 206
ECG in, 203
of gastrointestinal origin, 200
of ischaemic origin, 206–7
non-ischaemic, 199–204
diagnosis of, 199
prognosis, 207–8
in precordium, 200
prognosis, 207–8
of psychological origin, 200
of pulmonary origin, 200
types of, 199
chronic obstructive pulmonary disease (COPD), 176
chronic renal failure, 116
Churg-Strauss syndrome, 274
circumflex artery (LCX), 16, 17–18, 28, 65
occlusion of, 18, 26, 82, 104–5, 163, 280, 285
distal dominant, 160
dominant, 96–8
inferolateral infarction due to, 165
lateral infarction due to, 152
proximal to OM branch, 92
STE-ACS due to, 92, 97
proximal, 235
CMDCT. See coronary multidetector computer tomography
CMR. See cardiovascular magnetic resonance
cocaine, 273–4
computerised tomography (CT), 205
congenital defects, 268–9
contrast-enhanced CMR (CE-CMR), 4–5, 281
COPD. See chronic obstructive pulmonary disease
cor pulmonale, 42
chronic, 50
coronary angiography, 3, 15–18, 236, 257, 267
normal case, 4
role of, 8
coronary arteries. See also specific arteries
ECG limitations and, 25
coronary arteritis, 274
coronary artery disease
multivessel, 237
coronary circulation, 17
coronary dissection, 266
coronary multidetector computer tomography (CMDCT), 3, 4, 15–18
coronary perfusion, 301
coronary spasm, 22, 220, 271–3
coronary tree, 15–18
correlation exercise tests, 9
CT. See computerised tomography
DCM. See dilated cardiomyopathy
depolarisation
diastolic, 129
ventricular, 130
dilated cardiomyopathy (DCM), 199
direct patterns, 21
dissecting aneurysm, 200, 204
differential diagnosis, 201
pain due to, 205
dyskinesia, 274
ECG. See electrocardiography
echocardiography, 3, 8, 257
invasive v. non-invasive, 8
electrocardiography (ECG), 3
of ACS
Q wave infarction and, 106
risk stratification in, 257–65
amplified, 57
of anteroseptal zone, 282–5
of extensive anterior infarction, 148
patterns, 151
basal, 47, 52, 100, 101
CE-CMR v., 140
in chest pain, 203
in chronic IHD, 49
in chronic phase, 29
in classic exercise angina, 297–8
clinical ischaemia and, 22–3
in cor pulmonale, 50
double infarction, 171
electrophysiological mechanisms of, 32–8
fibrinolytic therapy and, 228–33
of infarct zone, 282–5
in-hospital mortality and, 242
injury patterns and, 20–2
ischaemia patterns and, 20–2, 31–2
limitations of, 23–4, 304–407
anteroseptal zone nad, 25
coexisting heart diseases and, 25
coronary artery variants and, 25
electrophysiological data, 24
inferior wall involvement, 26–7
lateral wall involvement and, 25–6
LV structure and, 25
vectorial forces and, 25
VR lead and, 27
location criteria from, 66–105
measurement of parameters, 129
in MI, 136
MI, multiple, 169
mid-anterior infarction, 152
of middle fiber block, 193
in multiple infarctions, 166–8, 287
of multivessel chronic coronary artery disease, 237
negative T wave, 45
in NSTE-ACS, 210, 238
normal, 240–2
occluded arteries and, 67–8
with pain, 101
patterns
A-1, 141, 282
A-2, 146, 283
A-3, 148, 284
A-4, 150, 284
ACS, 211
arising of, 142, 145, 159
atypical, 104–5, 211–12
B-1, 154, 284–5
B-2, 159, 285
B-3, 161, 285
classification of, 23–4
clinical viewpoint, 59–62
electrophysiologic mechanisms of, 55–9
of injury, 55
Q waves in diagnosis, 166, 232
QRS complex in, 52
risk stratification, 257
with SAH, 170
of STE-ACS
due to LAD occlusion, 76
ST-segment elevation, 70
subendocardial ischaemia, 32
subepicardial ischaemia, 32
T wave voltage in, 52
24-lead, 27
electrodes, 59
enzymatic assessment, 257, 263, 265
exercise stress test, 205–6, 242, 288, 309
criteria, 117
false negative, 117
false positive, 117
in IHD, 245
precordial pain and, 124, 299
subendocardial injury patterns during, 118
extensive anterior infarction, 148
external body-mapping surface technique, 27
fibrinolysis, 228
fibrinolytic therapy, 228–33
LBBB and, 249–50
first diagonal branch occlusion, 102
FP. See frontal plane
free-wall rupture, 245–6
frontal plane (FP), 12
Gadolinium-enhanced CMR, 137
gender, 308–9
GUSTO trial, 223
heart
bulls-eye image, 13
location of, 5
segments of, 13
heart walls. See also anterior wall; inferior wall; lateral wall;
posterior wall; septal wall
CMR of, 5–15
perfusion of, 16–18
hemiblocks, 174–93. See also inferoposterior hemiblock;
superoanterior hemiblock
false Q wave patterns due to, 189
Q wave masking, 177–8
Holter recordings, 36, 221, 288, 303
hypercoagulation states, 266
hyperenhancement patterns, 10
hypertension, 54, 256
pulmonary, 300
hypertrophic cardiomyopathy, 172, 199
hypokalemia, 42
hypothermia, 117
ICS. See intraventricular conduction systems
IHD. See ischaemic heart disease
infarction. See also myocardial infarction; vector of infarction
aborted, 214–33, 219, 283
acute phase of, 53, 153
anterior, 11, 222
complete RBBB and, 193
with IPH, 186
SAH associated with, 177
anteroinferior, 144
anteroseptal, 126, 282
apical-anterior, 143–4, 145, 146, 147, 149–50, 171
ECG pattern of, 148
false impression of, 148
pacemakers and, 194
atrial, 293–5
chronic, 281
double, 171
enzymatic, 198
extensive anterior infarction, 148
inferior wall, 44, 159–60, 162, 230
ECG pattern of, 162
ECG-VCG example of, 190, 191
IPH associated with, 177, 184
with lateral ischaemia, 45
SAH with, 183, 187
inferolateral, 157, 163, 164, 282
LCX occlusion and, 165
RCA occlusion and, 165
inferolateral apical, 160
in inferolateral zone, 154
lateral, 154
ECG pattern of, 160
with LBBB, 181
infarction (cont.)
  left ventricle, 291–3
  mid-anterior, 150, 151
    ECG pattern of, 155
    with SAH, 185
  non-Q-wave, 130, 233–42, 289
    defining, 291
    presentation of, 289–90
    types of, 290–1
    patterns of, 134
  posterior, 11
    Q wave, 130, 133, 140, 151, 214–33, 289, 305, 306
    diagnosis of, 174
    differential diagnosis of, 168–70
    with disappearing Q, 295–6
    evolving, 218
    masking hemiblocks, 178
    of subepicardial ischaemia, 220–1
    Q waves
diagnosis of, 269
  quantifying, 285–7
  right-ventricular, 293
  septal, 141, 177, 178, 282
    with SAH, 188
inferior leads, 189
inferior wall, 6–7, 15
  ECG limitations and, 25–6
  infarction, 44
    with lateral ischaemia, 45
    MI, 138
    rupture, 248
inferolateral infarction, 157, 162, 163, 164, 282
due to LCX occlusion, 165
due to RCA occlusion, 165
inferolateral zone, 18, 28
  ECG patterns of, 282–5
  IHD and, 44–6
  infarction in, 154
  LCX occlusion in, 82
  RCA occlusion in, 82
  STE-ACS involving, 223
inferoposterior division, 18
inferoposterior hemiblock (IPH), 161, 177
  anterior infarction with, 186
  inferior infarction and, 177, 184
  mid-anterior infarction and, 188
  Q waves of infarction masking, 178
inferoposterior wall, 138
injury
  ECG patterns of, 20–2
  patterns of, 134
  vector, 59, 73–4, 74–5, 89, 96
    direction, 68, 77–8, 92
    movement of, 48
  interolateral zone, 24
  intramural haematoma, 204
  intraventricular blocks, 250–7
  intraventricular conduction systems (ICS), 172, 228
  IPH. See inferoposterior hemiblock
  ischaemia. See also myocardial ischaemia
cascade, 302
ECG patterns, 20–2
  grade of, 224–7
  patterns of, 134
  persistent, 56–7
  silent, 302–3
  in ACS, 302
  in chronic patient, 302–3
  type I, 302
  type II, 302
ischaemic heart disease (IHD)
  acute phase of, 209
  chronic, 20, 22, 38
  ECG in, 49
  diagnosis of, 22–3
  ECG in, 308–9
    correlations and prognostic implications, 197–8
  ECG limitations and, 24–5
  exercise tests in, 245
  negative T wave in, 40–9, 203
  diagnostic criteria for, 40–4
  location criteria, 44–9
  pattern of, 217
  severe, 181
  ST-segment depression in, 111–19
  diagnostic criteria, 111–13
  location criteria, 113–14
  ST-segment elevation in, 63–6, 65
  isotropic studies, 3
Kawasaki’s disease, 274
lateral area, 137
lateral infarction, 154, 155
due to LCX occlusion, 152–3
  ECG pattern of, 160
lateral leads, 25–6, 95–6
lateral wall, 6–7, 15
  ECG limitations and, 25–6
  LCX. See circumflex artery
  lead I
    Q wave, 128
    ST segment in, 100
  lead II
    Q wave, 128
    Q wave, 128
  lead III
    Q wave, 128
    lead VF
    Q wave, 128
left anterior descending coronary artery (LAD), 16, 17, 230
  anomalous origin of, 271
  occlusion of, 18, 28, 42, 64, 76, 80, 141, 144, 146, 212, 231
  anteroseptal zone, 71
  proximal, 46, 148
  STE-ACS due to, 72, 73, 77, 78, 85
  ACS due to, 116
left bundle branch
  divisions of, 182
  middle fiber block, 193
  perfusion of, 18
left bundle branch block (LBBB), 42, 54, 228, 262, 288
acquired, 236–7
complete, 120, 172–4
infarction with, 181
ECG criteria in, 182
fibrinolytic therapy, 249–50
negative T wave in, 51
ventricular activation in case of, 179
left main incomplete occlusion, 234
left main trunk (LMT), 27, 213
occlusion, 98, 303
ECG limitations and, 25
left ventricular aneurysms (LVA), 304
left-deviated AQRS, 189
left-ventricular apical ballooning, 267–8
LMT. See left main trunk
longitudinal vertical plane, 12
LVH
injury patterns and, 120–7
magnetic resonance imaging (MRI), 257
McGinn-White pattern, 206
MI. See myocardial infarction
mid-anterior infarction, 150, 151
ECG, 152, 155
IPH and, 188
with SAH, 185
middle fibers, block of, 193
mirror patterns, 21
Mobitz-type blocks, 223
monomorphic sustained ventricular tachycardia, 251
mortality
estimating, 225
in-hospital, 242
long-term view, 229
pre-hospital, 252
QRS duration and, 249
MRI. See magnetic resonance imaging
myocardial bridging, 207, 299–300
myocardial infarction (MI), 19
aborted, with Q wave, 296
ACS and, 244–7
acute, 69, 197, 230
anterior, 99, 149
subacute, 295
diagnostic criteria, 197, 281–2
ECG changes in, 136
ECG criteria in, 182
ECG of multiple, 166–8, 169, 287
enzymatic, 295
inferior, 103, 158, 294
inferolateral, 161–2
inferoposterior, 138
lateral, 137, 154, 155, 156
posterior, 138
Q wave, 132–6, 275–9
criteria, 135
ECG criteria, 133–6
location of, 137–66
septal, 143
QRS changes due to, 129–30, 166
small septal, 143
myocardial ischaemia
clinical settings due to, 197
ECG of, 19–29
myocarditis, 42
acute, 173, 204
necrosette, 198, 279, 295
necrosis, 279, 281
diagnosing, 180
ECG patterns, 20–2
Q waves of, 129, 133, 136, 159, 282
electrophysiological mechanism of,
130–1
theories of, 131–2
in SAH, 183
nomograms, 225
oblique marginal (OM), 18
occlusion. See also circumflex artery, occlusion; left anterior
descending coronary artery, occlusion; right coronary
artery, occlusion
acute phase of, 217
ECG signs and, 67–8
first diagonal branch, 102
left main incomplete, 234
multivessel, 233
proximal to D1 and S1, 72–4
ST-segment changes and, 222–3
OM. See oblique marginal
OM branch
LCX occlusion proximal to, 92
cocclusion, 46, 93–6, 157
STE-ACS due to, 94
open artery theory, 209
P wave, 243
abnormal, 306
pacemakers, 126, 194, 247–50
pain. See also chest pain; precordial pain
ECG with, 101
ECG without, 123
papillary muscle rupture, 246–7
passivation of disrupted plaque, theory of, 209
PCI. See percutaneous coronary intervention
percutaneous coronary intervention (PCI), 211–12, 222,
270–1
STE-ACS before, 84
pericarditis, 42
acute, 200
chronic constrictive, 49
differential diagnosis, 201, 202
idiopathic, 109
pheochromocytoma, 274
polymorphic ventricular tachycardia,
251
posterior wall, 14, 15
MI, 138
PR segment, 243
<table>
<thead>
<tr>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>precordial leads, 25, 38, 88</td>
</tr>
<tr>
<td>Q wave, 128, 141</td>
</tr>
<tr>
<td>ST-segment depression in, 114, 236</td>
</tr>
<tr>
<td>ST-segment elevation in, 80, 98–100, 106, 264</td>
</tr>
<tr>
<td>precordial pain, 48</td>
</tr>
<tr>
<td>other clinical settings, 119</td>
</tr>
<tr>
<td>at exercise, 124</td>
</tr>
<tr>
<td>exercise test in patient with, 299</td>
</tr>
<tr>
<td>precordium, 200</td>
</tr>
<tr>
<td>PREDICT score, 258, 260</td>
</tr>
<tr>
<td>pre-fibrinolytic area, 241</td>
</tr>
<tr>
<td>premature atrial complexes, 253</td>
</tr>
<tr>
<td>premature ventricular complexes (PVCs), 244, 250, 288</td>
</tr>
<tr>
<td>Prinzmetal angina, 221, 226, 271–3</td>
</tr>
<tr>
<td>pulmonary embolism, 42, 200, 204</td>
</tr>
<tr>
<td>PVCs. See premature ventricular complexes</td>
</tr>
<tr>
<td>Q wave</td>
</tr>
<tr>
<td>evolving, 125</td>
</tr>
<tr>
<td>infarction, 305, 306</td>
</tr>
<tr>
<td>aborted, 296</td>
</tr>
<tr>
<td>with disappearing Q, 295–6</td>
</tr>
<tr>
<td>ECG in ACS with, 106</td>
</tr>
<tr>
<td>Q waves, 20, 22, 26, 27, 166, 167–8</td>
</tr>
<tr>
<td>abnormality criteria, 135</td>
</tr>
<tr>
<td>in admittance ECG, 232</td>
</tr>
<tr>
<td>classification of, 137</td>
</tr>
<tr>
<td>false, due to hemiblocks, 189</td>
</tr>
<tr>
<td>infarction, 130, 133, 140, 151, 214–33, 228, 289</td>
</tr>
<tr>
<td>diagnosis of, 170–94, 174, 269</td>
</tr>
<tr>
<td>differential diagnosis of, 168–70</td>
</tr>
<tr>
<td>evolving, 218</td>
</tr>
<tr>
<td>masking hemiblocks, 178</td>
</tr>
<tr>
<td>of subepicardial ischaemia, 220–1</td>
</tr>
<tr>
<td>inferolateral zone, 166</td>
</tr>
<tr>
<td>limits of, 128</td>
</tr>
<tr>
<td>lead I, 128</td>
</tr>
<tr>
<td>lead II, 128</td>
</tr>
<tr>
<td>lead VF, 128</td>
</tr>
<tr>
<td>precordial lead, 128</td>
</tr>
<tr>
<td>VL lead, 128</td>
</tr>
<tr>
<td>VR lead, 128</td>
</tr>
<tr>
<td>MI, 29, 132–6, 275–9, 287–8</td>
</tr>
<tr>
<td>criteria, 135</td>
</tr>
<tr>
<td>ECG criteria, 133–6</td>
</tr>
<tr>
<td>location of, 137–6</td>
</tr>
<tr>
<td>of necrosis, 129, 133, 136, 159, 282</td>
</tr>
<tr>
<td>electrophysiological mechanism of, 130–1</td>
</tr>
<tr>
<td>theories of, 131–2</td>
</tr>
<tr>
<td>pathologic, 175, 220</td>
</tr>
<tr>
<td>persistent, 170</td>
</tr>
<tr>
<td>in precordial leads, 141</td>
</tr>
<tr>
<td>secondary to single infarctions, 279–87</td>
</tr>
<tr>
<td>septal-MI, 143</td>
</tr>
<tr>
<td>transient, 169–70</td>
</tr>
<tr>
<td>in V1-V2, 23</td>
</tr>
<tr>
<td>in V3-V4, 23</td>
</tr>
<tr>
<td>in V5-V6, 23</td>
</tr>
<tr>
<td>QR morphology, 130</td>
</tr>
<tr>
<td>positional, 173</td>
</tr>
<tr>
<td>Qr wave, 157</td>
</tr>
<tr>
<td>in inferior leads, 189</td>
</tr>
<tr>
<td>QRS complex, 11, 25, 133, 137</td>
</tr>
<tr>
<td>changes of, 243</td>
</tr>
<tr>
<td>due to MI, 129–30, 166</td>
</tr>
<tr>
<td>composition of, 131</td>
</tr>
<tr>
<td>criteria, 174</td>
</tr>
<tr>
<td>fractioned, 129, 135, 159, 166, 278, 288, 289</td>
</tr>
<tr>
<td>narrow, 63–110</td>
</tr>
<tr>
<td>subendocardioGraphic patterns of, 110–20</td>
</tr>
<tr>
<td>scoring system, 276</td>
</tr>
<tr>
<td>wide, 241, 287–8</td>
</tr>
<tr>
<td>ACS with, 247–50</td>
</tr>
<tr>
<td>ECG patterns of ischaemia in, 54</td>
</tr>
<tr>
<td>infarction with, 296</td>
</tr>
<tr>
<td>as prognosis marker, 304</td>
</tr>
<tr>
<td>QRS loop</td>
</tr>
<tr>
<td>morphology of, 133</td>
</tr>
<tr>
<td>QRS-T loop, 232</td>
</tr>
<tr>
<td>QS morphology, 26, 130, 150, 305</td>
</tr>
<tr>
<td>in V1-V2, 142</td>
</tr>
<tr>
<td>QT interval, 243</td>
</tr>
<tr>
<td>long, 288</td>
</tr>
<tr>
<td>QTc interval, 268</td>
</tr>
<tr>
<td>R waves, 21, 114, 175, 237</td>
</tr>
<tr>
<td>RBBB. See right bundle branch blocks</td>
</tr>
<tr>
<td>RCA. See right coronary artery</td>
</tr>
<tr>
<td>reperfusion patterns, 37, 220, 232, 268</td>
</tr>
<tr>
<td>area, 249</td>
</tr>
<tr>
<td>arrhythmias, 232</td>
</tr>
<tr>
<td>repolarisation</td>
</tr>
<tr>
<td>abnormalities, 174, 226</td>
</tr>
<tr>
<td>alterations, 112</td>
</tr>
<tr>
<td>cardiac memory, 52</td>
</tr>
<tr>
<td>changes in, 260</td>
</tr>
<tr>
<td>delay of, 31–2, 33</td>
</tr>
<tr>
<td>early</td>
</tr>
<tr>
<td>differential diagnosis, 201</td>
</tr>
<tr>
<td>mixed changes, 48</td>
</tr>
<tr>
<td>typical patterns of, 50</td>
</tr>
<tr>
<td>right bundle branch blocks (RBBB), 100, 120, 121, 204, 223</td>
</tr>
<tr>
<td>acquired, 256–7</td>
</tr>
<tr>
<td>complete, 172, 176, 178, 262</td>
</tr>
<tr>
<td>acute anterior MI with, 193</td>
</tr>
<tr>
<td>ECG-VCG correlation in, 175</td>
</tr>
<tr>
<td>occurrence of, 256–7</td>
</tr>
<tr>
<td>right coronary artery (RCA), 16, 17, 28, 102</td>
</tr>
<tr>
<td>dominant, 90</td>
</tr>
<tr>
<td>occlusion of, 18, 82, 84, 163, 164, 293, 294</td>
</tr>
<tr>
<td>chronic phase, 90</td>
</tr>
<tr>
<td>distal to RV marginal branches, 86–7</td>
</tr>
<tr>
<td>dominant, 89</td>
</tr>
<tr>
<td>inferolateral infarction due to, 165</td>
</tr>
<tr>
<td>non-dominant, 160</td>
</tr>
<tr>
<td>STE-ACS due to, 88, 91, 104</td>
</tr>
<tr>
<td>right precordial leads, 27</td>
</tr>
<tr>
<td>right ventricle (RV), 12</td>
</tr>
<tr>
<td>infarction, 293</td>
</tr>
</tbody>
</table>
risk scores, 257–60
  global, 263, 265
TIMI, 257
RS morphology, 138, 157
RV. See right ventricle
SAH. See superoanterior hemiblock
cintigraphy, 257
SCS. See specific conduction system
septal infarction, 141, 177, 178, 282
  ECG pattern of, 143
  with SAH, 188
septal rupture, 246
septal wall, 6–7, 15, 162
single photon emission computed tomography (SPECT), 3,
  9, 20, 292, 298, 303
sinus node, 18
sinus tachycardia, 252–3, 288
specific conduction system (SCS), 16–18
  perfusion of, 18
SPECT. See single photon emission computed tomography
sportsmen, 42
stroke, 42
ST-segment
  changes in multivessel disease, 105–7
  isoelectric, 100
  in lead I, 100
  normal limits of, 55
ST-segment depression, 21, 22, 47, 100, 106–7, 213, 289
  on admission, 234–42
  assessing, 222
  circumferential involvement, 114–16
  circumferential subendocardium involvement, 61,
    234–9
  in clinical settings, 119–20
  in IHD, 111–20
    diagnostic criteria, 111–13
    location criteria, 113–14
  non-ischaemic, 125
  occlusion site and, 222–3
  in precordial leads, 106, 119, 236
  reciprocal patterns, 62
  regional involvement, 116–19
ST-segment elevation, 20, 22, 24. See also acute coronary
  syndromes, STE
ACS
  classifications for, 29
  acute MI with, 69
  on admission, 221–7, 234–42
  assessing, 222
  causes of, 108
  in clinical settings, 107–10
  dynamic changes in, 227
  electrophysiological mechanism of, 61–2
  in IHD, 65
  in lateral wall leads, 102
  in many leads, 202
  new onset persistent, 209–10
  occlusion site and, 222–3
  persistent, 211
  in precordial leads, 80, 98–100, 264
  reciprocal patterns, 62
  T waves with, 51, 273
  transient, 65
  subendocardial injury pattern, 20, 32, 35, 58, 237, 275
  electrophysiological mechanism of, 60–1
  exercise test, 118
  with narrow QRS, 110–20
  vectors, 60
  subendocardial ischaemia, 19, 20, 35, 39, 217
  circumferential, 234
  T wave of, 39
  taller-than-normal, 39
  subepicardial injury pattern, 20, 32, 35, 36, 57, 58, 59, 65,
    217–19
  ECG-VCG, 66
  infarction Q wave in, 220–1
  with narrow QRS, 63–110
  vectors, 60
  subepicardial ischaemia
diagnostic criteria, 44
  ECG pattern of, 40–54
  T loops of, 43
sudden death, 288, 309
superoanterior hemiblock (SAH), 161, 177, 304
  ACS with, 255–6
  anterior infarction associated with, 177
  ECG with, 170
  inferior infarction associated with, 183
  ECG-VCG example of, 190
  masking, 187
  mid-anterior infarction with, 185
  necrosis in, 183
  Q waves of infarction masking, 178
  septal infarction with, 188
T loops, 43
T waves, 23
  abnormalities, 30–54, 308
  ECG-VCG correlation of, 43
  flattened, 237, 289
    in lead I, 308
    in NSTE-ACS, 239–40
  hyperkalemia and, 42
  location, 30
  morphology, 30
  negative, 20, 35, 37, 41, 213, 220
    in alcoholism, 53
    causes of, 42
    in clinical situations, 49–54
    deep, 42
    ECG with, 45
    in IHD, 40–9, 205
    in left bundle branch block, 51
    in NSTE-ACS, 239–40
    with ST-segment elevation, 51
    in subacute phase, 38
    symmetric, 54
  normal limits of, 30
  peaked, 41
  positive, 21, 35
ST segment elevation and, 273
T waves (cont.)
in stroke patients, 42
of subendocardial ischaemia, 39
symmetric, 41
tall, 35, 36, 39
voltage, 30
low, 52
tachyarrhythmia, 266
tachycardia
post, 42
sinus, 252–3, 288
Takayasu's disease, 274
Tako-Tsubo syndrome, 268
TAP. See transmembrane action potential
TIMI risk index, 223, 261
in NSTE-ACS, 259–60
in STE-ACS, 257–9
transient lengthening, 268
transmembrane action potential (TAP), 31, 34, 55, 57
non-excitable areas and, 129
sum of, 33, 34
summation, 57–8
transmural ischaemia, 219
transverse plane, 12
typical exercise angina, 19

U wave, 243
negative, 307

VCG loops, 135, 136, 158
vector of infarction, 145, 152
direction of, 160–1
movement of, 48, 131
theory of, 58–9
vector of ischaemia
movement of, 34–5, 48
theory of, 33–4
vectorcardiogram, 31
vectorial forces, 25
ventricular aneurysms, 247
ventricular fibrillation (VF), 224
incidence of, 252
ventricular hypertrophy, 54
VF. See ventricular fibrillation
VL leads, 128
VR leads, 27
Q wave, 128
window of Wilson, 131
Wolff-Parkinson-White syndrome, 192, 193–4, 247–50
X syndrome, 207, 274, 298–9
coronary arteries in, 300
X-ray examination, 3
role of, 8