**SUPPLEMENTAL METHODS**

**Biochemical data**

Serum cardiac troponin I concentrations were assessed by two independent CLIA-approved laboratories at the University of Louisville and KentuckyOne Health Jewish Hospitals. The Ortho Vitros 5600 assay was used to assess cardiac troponin I in subjects enrolled at the University of Louisville Hospital. For this assay, a 99% cutoff level for a healthy population was 0.035 ng/mL and had a coefficient of variance below 10% at this level. Troponin levels < 0.035 ng/mL were considered non-elevated. This assay’s FDA-approved package insert further defined 0.12 ng/mL as the most efficient (more specific) cutoff point for the diagnosis of acute MI with this assay. Troponin levels >0.12 ng/mL were considered elevated, and levels from 0.035–0.12 ng/mL were considered non-diagnostic for the purposes of the present study.

The Beckman Access assay was used to assess cardiac troponin I in subjects enrolled at KentuckyOne Jewish Hospitals. For this assay, a 99% cutoff level for a healthy population was 0.04 ng/mL, but the results did not achieve a coefficient of variance below 10% until 0.06 ng/mL. Troponin levels < 0.04 ng/mL were considered non-elevated. This assay further defined 0.5 ng/mL as the most efficient (more specific) cutoff point for the diagnosis of acute MI. Troponin levels > 0.5 ng/mL were considered elevated, and levels from 0.04–0.5 ng/mL were considered non-diagnostic for this study.

**Primary endpoints**

This evaluation was accomplished by comparing the frequencies of angiographic characteristics in outcome Group 1 (lesions with histologically confirmed thrombus) versus Not-Group 1 (all lesions without histologically confirmed thrombus); outcome Group 2 (lesions with highly probable coronary thrombus) versus Not-Group 2 (all lesions not highly probable of having a coronary thrombus) and outcome Group 3 (lesions highly unlikely to have a coronary thrombus) versus Not-Group 3 (all lesions not highly unlikely to have a coronary thrombus).

The ability of an angiographic characteristic to differentiate between outcome groups (and hence its ability to identify the lesion types) was assessed by determining model-estimated odds ratios, sensitivity, and specificity. Since the angiographic characteristics represented a binary response variable, the logit link function was used in this modeling. Also, because the characteristics considered are lesion-specific, both the vessel and the subject represented significant sources of correlation between responses. Thus, model coefficients were estimated using generalized estimating equations (GEE), assuming a compound symmetry correlation structure [1]. Characteristics that could not be determined were considered missing data, to reflect clinical practice. It should be emphasized that if a clinician were unable to determine the presence or absence of an angiographic characteristic, the failure of the angiographic assessment to produce a result would not have influenced the diagnosis.

**SUPPLEMENTAL TABLES**

**Supplemental Table 1.** Definitions for study diagnoses.

|  |  |
| --- | --- |
| **Diagnoses** | **Definitions** |
| Acute myocardial infarction (MI) | Must satisfy ALL:   * Symptoms consistent with acute ischemia lasting > 10 min in the last 24 hours * ST-segment depression/elevation in ≥ 2 continuous ECG leads – OR – elevated cardiac troponin |
| Stable coronary artery disease (CAD) | Must satisfy ALL:   * Clinically stable * Presenting for an elective catheterization to evaluate for stable CAD * No recent revascularization attempts |

**APPENDIX FIGURES**

**Supplemental Figure 1.** Coronary angiographic assessment scoring sheet.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Angiographic Characteristic** | **Score** | | | | | | | | | | | | |
| Vessel (LM, LAD, LCx, RCA, Graft)  [All vessels must be assigned to one of the above listed vessel types. **Note**: ramus is considered part of LAD territory] |  | | | | | | | | | | | | |
| Graft Type (vein, LIMA, RIMA, gastro-epiploic, radial, other) |  | | | | | | | | | | | | |
| Graft #1 destination (LM, LAD, LCx, RCA, Graft) |  | | | | | | | | | | | | |
| Graft #2 destination (LM, LAD, LCx, RCA, Graft) |  | | | | | | | | | | | | |
| Graft #3 destination (LM, LAD, LCx, RCA, Graft) |  | | | | | | | | | | | | |
| Total number of lesions in this vessel  [Individual lesion must be in a distinct vessel branch or separated by ≥ 3 cm of normal vessel (< 10 stenosis) to constitute a separate lesion] |  | | | | | | | | | | | | |
| Lesion number (29-Segment Model) [2] |  | | | | | | | | | | | | |
| Stenosis by visual inspection (%) | 0 | 10 | 25 | | | | 50 | | 75 | | 95 | | 100 |
| Collaterals supplying territory of this vessel | Yes | | | | | No | | | Undetermined | | | | |
| Ambrose Morphology Score [3, 4] | Simple | | Complex | | | | | | | Undetermined | | | |
| TIMI Flow Grade [5] | 3 | | | 2 | | | | 1 | | | | 0 | |
| TIMI MPG [5, 6] | 3 | | | 2 | | | | 1 | | | | 0 | |
| Spherical, ovoid, or irregular intramural filling defect, surrounded on 3 sides by contrast medium, just distal to or within a coronary stenosis [7] | Present | | | | Absent | | | | | Undetermined | | | |
| Abrupt vessel cutoff with persistence of contrast [8] | Present | | | | Absent | | | | | Undetermined | | | |
| Intraluminal staining [9] | Present | | | | Absent | | | | | Undetermined | | | |
| Any intracoronary filling defect [4] | Present | | | | Absent | | | | | Undetermined | | | |
| Major dissection present (spiral dissection or a dissection with > 50% diameter reduction) [10, 11] | Present | | | | Absent | | | | | Undetermined | | | |
| Minor dissection present (linear extraluminal cap in >1 view without luminal compromise) [10, 11] | Present | | | | Absent | | | | | Undetermined | | | |

LM — left main coronary artery; LAD — left anterior descending artery; RCA — right coronary artery; LCx — left circumflex artery

**Supplemental Figure 2.** Ambrose Scoring System [3, 4]: Coronary Angiography Scoring Definitions and Guidelines.

|  |  |
| --- | --- |
| Source: Ambrose J, Israel D. Am J Cardiol, 1991; 68: 78B–84B | **Definitions** |
| Complex Lesions (ACS like lesions):   * Irregular ragged borders and intraluminal lucency * Eccentric, with a narrow neck, overhanging edges or irregular borders |
| Simple Lesions:   * Stenosis with smooth borders without evidence or any complex features |

**Supplemental Figure 3.** 29-segment coronary artery map with the addition of branch segments of large diagonal or obtuse marginal vessels, and the ramus intermedius branch [2].

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Right coronary artery** | | | coeur | | | |
| 1 | Proximal RCA conduit segment | |
| 2 | Mid-RCA conduit segment | |
| 3 | Distal RCA conduit segment | |
| 4 | RPDA | |
| 5 | RPA | |
| 6 | First RPL segment | |
| 7 | Second RPL segment | |
| 8 | Third RPL segment | |
| 9 | Inferior septal | |
| 10 | AM segment(s) | |
| **Left coronary artery** | | |
| 11 | LMCA segment | |
| 12 | Proximal LAD segment | |
| 13 | Mid-LAD segment | |
| 14 | Distal LAD segment | |
| 15 | Lateral first diagonal segment | |
| 16 | Lateral second diagonal segment | |
| 17 | LAD septal perforator segment | |
| 18 | Proximal Cx segment | |
| 19 | Mid-Cx segment | |
| 19.1 | Distal Cx segment | |
| 20 | First OM segment | |
| 21 | Second OM segment | |
| 22 | Third OM segment | |
| 23 | Cx AV groove continuation segment | |
| 24 | First LPL segment | |
| 25 | Second LPL segment | |
| 26 | Third LPL segment | |
| 27 | LPL descending artery segment | |
| 28 | Ramus intermedius | |
| 29 | Third diagonal segment | |
| **Coronary vessels** | | **LMCA** | | **LAD** | **LCx** | **RCA** |
| **Segment numbers corresponding to lesions** | | 11 | | 12, 13, 14, 15, 16, 17, 28, 29 | 5, 6, 7, 8, 18, 19, 19.1, 20, 21, 22, 23 | 1, 2, 3, 4, 9, 10, 24, 25, 26, 27 |

AM — acute marginal; CX — circumflex artery; LAD — left anterior descending artery; LMCA — left main coronary artery; LPL — left posterolateral; OM — obtuse marginal; RCA — right coronary artery; RPA — right posterior atrioventricular segment; RPDA — right posterior descending artery; RPL — right posterolateral

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