Impact of thrombus aspiration conjugative with Anisodamine for the
Prevention of No-reflow phenomenon following primary Percutaneous coronary intervention

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Abstract: Objective: We sought to evaluate the combination therapy of thrombus aspiration plus anisodamine in prevention of No-reflow phenomenon during percutaneous coronary intervention. Method: From October 2009 to June, 143 consecutive patients with STEMI who received manual thrombus aspiration were involved in a Double Center prospectively analysis. The patients were treated with anisodamine (1000 fig/kg) plus Tirofiban (pg/kg) (Group A, n = Tirofiban and pg/kg alone (group B, n = respectively. The drugs were selectively injected into the infarct-related artery (IRA), Through the occlusion to the distal segment via the Thrombus ASPI Theration catheter advanced MTO the IRA. Primary endpoints were postprocedural corrected thrombolysis in myocardial frame count (infarction). The proportion of complete c>70% St-segment resolution (STR) myocardial blush Grade 2~3 (MBG) post PCI. Secondary endpoints included peak value of creatine kinase-MB TIMI flow grade; 6-month outcome including left ventricular ejection fraction (LVEF), b16> as acardiac death target vascular revascularization, Re-infarction and their combination as major adverse cardiac events (MACE). Result: Baseline characteristics were not different between two groups. Compared to group B, Group A had 1 A lower corrected TIMI coronary flame count (_p<0.05). 2 a higher proportion of complete Segment Resolution (_P<0).

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③ a better myocardial blush 2-3 grade ratio (_p = 0.), and ④ A lower peak creatine kinase-mb (_p0.05).

There is no differences in TIMI 3 flow grade between the two groups (P )) B20>0. No differences were foundin Cardiac Death, tvr, r=infarction, mace, between The two groups during 6-month follow-up Only a improvement trend in group eight (P0.05). Nevertheless, LVEF at 6 month is higher in group Eight (P0.01). Conclusion:

preventively intracoronary Administration of Anisodamine 1000 ug via thrombus aspiration catheter can improve myocardial reperfusion for acute STEMI with initial timi2 treated with primary PCI.

Keywords: ST elevation myocardia 1 infarction; no-reflow Phenomenon; Primary percutaneous coronary Inter-vention; thrombus Aspiration; anisodamine

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Direct percutaneous coronary intervention (PCI) is acute ST segment elevation myocardial infarction (STEMI) the preferred treatment for AAA however, and Interventional microcirculation disorders make the
long-term benefits of therapy clearShowLower2.theoccurrence of no recurrence in the For a """" is a6.0.6%~5%,in
directPCIover50%patients may not have duplicateflow,evenafterPCIpostTIMIflow3-level of patients has a
phaseWhen part is not able to achieve complete perfusion of the myocardial level().

the current prevention policy without a stream is not yet determined,Joint thrombus extractioncatheter and platelet
glycoproteinⅠb/Ⅲareceptor antagonist possible realNow the best myocardial perfusion,howeverinfuse-amireseareachrsults
show, to front wallSTEMIpatient Row DirectPCIproucedureIntra-coronary injection of acyclovir in the with combined
thrombus aspiration does not decrease Heart infarct area, Improve clinical results.anisodamine(ANI)Show beneficial
effects in preliminary study of no multiplexing foran). Previous studies have mainly observed the inverse of this
treatment strategy for non-complex flowseffect,and currently not seen thrombus aspiration catheter combinedwith
AnisodaminePrevent no-streaming reports. This preview, random, Double-blind research aimsevaluate in-pump
injectionof Anisodamine(1YG)toSTEMIPatient directlyPCIThe preventive effect of no multiple flow in operation.

1. objects and methods

1.1 objects

2009-10-2012-North China Petroleum Administration General Hospital Heart Department of Medicine and Hebei
Medical University Second Hospital Department of Cardiology, on the insiders directlyPCIacuteSTsegment Elevation
myocardial infarction patients selection criteria: ① typical chest pain 30min.above; ② at least 2 continuous
electrocardiogramSTsection elevation>1mm/and or heart-front arealead to>2mm; ③ Basic angiography(TIMI)blood
flow<2 level.exclusion standard: ① cardiogenic shock: systolic pressure [mmHg(1mmHg= 0.76cmHg)] beyond min.or
require a vein to makeuse a step-up drug or an aortic arthritis to reverse the stroke; ② bleeding tendencies History; ③ in
the past 6major surgery in the week; ④ in the past 6 Stomach intestinal or genitourinary tract haemorrhage ⑤
pastaCerebral Vascular Event in the year; ⑥ platelet countl (8)/mm3; ⑦ kidney function is not fully definedfor
serumcreatinine>2.5mg/DL; ⑧ Slow hemodialysis renal failure, Pregnancy; ⑨ Recovery after thrombolytic failurePCI; ⑩
existsthis division or clopidogrel contraindication; ⑪ Cannot provide informed consentbook.

1.2 Method

patients who meet the criteria for inclusion adopt a random numeric table method: 1 Israndomly divided into two
groups use a thrombus suction catheter (zeek, ZeonMedical company, Tokyo, Japan) repeated thrombus pumping in the
lesion area suction. Suction catheter will be withdrawn after suction is removed, with heparin brine flush after flushing
again to the narrow area of the criminal's blood vessel, then the drug, the object is injected into the criminal blood
vessel by a thrombotic suction cavity. A Group allExample, firststoMountain Yellow 2X5yG/L saline Total 5mLQuick
Injection, after ROM class ten肾 kg.dissolve inmlSaline, on 2 min internal slow thrombus suction catheter
push; B Group Example, first give 5ML heparin saline injection, after ROM class Ten Jug/kg.dissolve
inmlSaline, in 2 min With thrombus succion catheter push. Two groups of patients PCI replace ROM class 0, ug·kg·1·mm-1H
intravenous drip, data analysis by intentional treatment Analysis. After the drug was injected, the operation was
followed by the regulation for coronaryangioplasty, once there is no multiplexer Any drug other than anisodamine can be
used according to experience. Continuous monitoring of ECG during surgery, blood pressure. All patients prior to
Operational aspirinmg, Clopidogrelmg. Postoperative allstandard treatment for coronary heart disease, includes a
aspirinforest, clopidogrel, stating drugs, nitrate ester, | - receptor antagonists agent, angiotensin converting enzyme
inhibitor vasopressinnoreceptor blockers.

1.3 Observation Indicator

Primary Endpoint: ① correctedTIMI Count Frames (CTFC) ② postoperative min ST section full drop rate; ③
myocardial perfusion after Operation color rating 3 The ratio of the level correction TIMI count frames and myocardium
colorrating, Blinded by two experienced intervention experts analyze two level endpoints including k-mb(Creatine
phosphate kinase isoenzyme) peak, 6 monthly follow-up major cardiovascular
1.4 Statistics Processing

The estimate of the sample content is based on the primary endpoint, to make the two groups of DirectPCI postoperative CTFCCThe difference between is a frame, assumes that each group is set to a standard deviation offrame, Check level 5%, Verify effectiveness 80%, Each group needs to be randomly assigned at least patients. the Continuous variable comparison between is used F check, before and after medication, Cent error comparison using repeated measurement variance analysis, The category variable uses the \( z \) and with \( \chi^2 \) check. Clinical follow-up data main heart illevent compound endpoint using kaplan-meier method to survive curv parse, Group difference application Logrank check. use SPSS \([\text{software for statistics.} \ P < 0.05 \text{ is statistically significant for differences.} \]

2. Results

2.1 Basic Clinical and angiographic features

altogether 146 patients selected, A Group patient with emergency coronary artery bypass surgery, B Group 2 cases only arthritic dilatation, 72 case Entry Select A Group, case selected B Group. for Clinical and angiographic situations see table 1, The age between two groups, sex, coronary Heart risk factor and from symptom to revascularization, Rake The blood vessels and between the two groups preoperative TIMI levels of blood flow no statistically significant (table 1).

2.2 Surgery related indicators

Both groups of surgeries successfully completed, A Group after Direct PCI Ming less than B Group \(23.8^\circ\text{A} 28.7^\circ, P < 0\); A Group after Operation MBG 2~3 The level ratio is significantly higher than B Group \(8^\% \text{morethan} 5^\%\), Corpse \( < 0.05\); A complete between the two groups 3 The drop rate is statistically different \(a.8^\% \text{than} 5^\%\), \( P < 0\); however, two groups of postoperative TIMI3 level no significant difference \(3^\% \text{than} A.4^\%\), \( P > 0.05\) (table 2). Compare the length and width of the brackets between the two groups frame diameter and use aspirin when discharged from hospital., clopidogrel, receptor blocker lag agent, convert enzyme inhibitor, The proportions of stating are not the same statistically significant.

2.3 Feasibility and security

injectable anisodamine 1 min significantly increases the blood pressure and heart rate plus \( P < 0.0^*^*\), to lengthen the hemodynamics of the drug over time with fade, after use 5~10 min the increment in is small (Table 3). Neither Group has serious bleeding complications, minor bleed in A Group Send Live 3 Example 4.2% and B Group 5 Example 7.04%, two groups of light There is no statistically significant difference between micro-bleed.

2.4 6 monthly follow-up

left ventricular function: left ventricular ejection fraction AT the Group is higher than B Group \(60^\% 7^\circ\text{ratio} 51 \pm 6^\circ, P < 0\) (Table 1, MACE 6 month) Follow-up Kaplan-Meier The curve displays, A the group and the B for the group MACE on direct PCI Postoperative 2 The bar curve appears to have a separate trend holding continue to after 6 months (diagram 1), A Group on MACE 3 example 417%, B group occurs MACE 5 example 7.04%, Although reduced values close to 5 0, but there was no statistically significant difference between the two groups \(P > 0\), cardiac death, Re-myocardial infarction and Harrow-vascular weight build AT the group is 1.39% \(1/72\), 1.39% \(1/72\) and \(1.39^\%\) \(1/72\), B Group to 2.82% \(2/71\), 1.41% \(1/71\) and 2.82% \(2/71\), Comparison between two groups no statistics meaning \(P > 0\) (Chart 1).

3. Discussion
The results of this study show: ① after ablood clot aspirationSuction cavity injection of drugs to lesion distal vessel is safe and good goodtolerance to prescription method. ② thrombus suction catheter Union Mountain yellowscopolamine can improve myocardial perfusion after Operation,reduce infarct size,increasedPCIPost-operation6Month left ventricular systolic function,MACEthingTheItem incidence showsa downward trend.

There is no compelling evidence of evidence-based medicine to support the use of bloodTube Expansion drug prevention No relapse,clinically applied drugs,such as glandsglycosides,sodium nitroprusside,The reason for your poor performance may be: ① microcirculation disorder that worsens after norecurrence⑥-, ② true mechanism not yet clear, Multiple factors participate in a no-stream-free sendBirth procedure, include platelet aggregation, remote thromboembolism, microcirculatory SpasmTwin, neutrophil padding, ischemia-reperfusion injury(), and without the drug mechanism single_, cannot resolve all pathophysiology questions questions, Best prevention strategy should be able to prevent or reduce blood vessel recanalization after the "microcirculation disorder", currently recognized effective precautions, including bloodplug suction and platelet glycoproteinmb/Meloran receptor antagonists, butin directPCIusing coronary artery injection of acyclovir in combination with Thrombussuction catheter, does not reduce infarct size, Improving clinical results⑤. This may be because the distal thromboembolism is only a part of the stream without a relapse reason.

The anisodamine is Mcholinergic receptor antagonist, has improved effect of microcirculation. Previous studies confirmed that the effect of anisodamine is clear show improved no multiplexing, accordingly, We speculate that the coronary injection injection of anisodamine may produce better prevention of no multiplexing vs. Previous research, This study has the following characteristics: first, over previous, injection of Anisodamine in the event of norecurrencecogo, and the present study was given to prevent no recurrence when norecurrence was taken, preventing the occurrence of multiple streams. Second, in previous research, anisodaminemainIf you inject the coronary artery by means of a guide tube, drugs may be primary The is distributed to the aorta root and the non infarct related vessels. This study after thrombus suction catheter is used to suck the thrombus, direct the anisodamine inject to reach the distal end of the occlusion rake lesion, to ensure high consistency, degree of anisodamine enters lesion distal coronary artery, Such a small dose local effect may be equal to or greater than non-selective Tof give greater doses. A good clinical outcome of this study is likely to be since anisodamine can change the pathophysiology of no-reflux.

Previous studies on the treatment of no-reflux doses of anisodamine in Zhongshan are still inconclusive, in animal model study from~SYGhas report. These studies, Final cumulative dose of Anisodamine nois a pre-operation, but is based on coronary blood flow after medication and myocardial perfusion ratings to determine, before Small sample, self toin reverseSTEMI patient Line DirectPCI No multiplexed research causes fixed dose 1.8g. The's anisodamine displays the results of the contrast, ctf and MBG significantly improved(). This study uses a fixed dose, anisodamine, instead of weighing the dose based on weight is simpler and Easy. The advantage of using local distal injection is that you can accurately inject the drug without taking a with near-End blood flow. More important Yes This study shows that injectable anisodamine can moderately increase blood pressure and heart rate increase coronary artery perfusion pressure ultimately improve myocardial waterplain perfusion.

inject anisodamine with a thrombus suction catheter, can not only change goodness TIMI blood rating, and can improve The indicator of the function that reflects the coronary artery micro-bloodcycle, such as correcting TIMI Count The number of frames (ctf) and myocardium color perfusion grading (MBG). Acute myocardial infarction dead patients PCI postoperative MBG and CTF, have been proven with ST section Drop, The myocardial infarct size estimated by the peak method, Myocardial soundno-reperfusion defined by contrast surgery, left ventricular function and long term fatality rate related(6). This research shows A Group after Operation MBG, and ctf csignificantly better than B Group.

The limitations of this study include: ① This study shows A Group is significantly Low CK-MB peak, reflect myocardial perfusion MBG, ctf, and ST Paragraph drop trend show better, hints for saving more myocardium, may improve
clinical outcomes, results show A Group on PCI 6 Month MACE only shows an improvement trend but no has statistical significance, may be due to insufficient sample size for validation MACE lack sufficient statistical strength, requires a larger sample. Predictive of the amount of Random study. ② does not use a cardiac MRI to show like or myocardial Contrast-Direct Quantitative indicators for evaluating myocardium microcirculation perfusion.

Summary, This study is the first to use a thrombus suction catheter combined with a mountainscopolamine Prevention Direct PCI intraoperative thrombus suction catheter in operation fire 1000 jug Shanliang is an effective prevention of no multiplexing, security Policy slightly.

References

Comparison of immediate angioplasty with thrombol] -

Table 2 two group of Apachie rating and Ca Horizontal comparison

<table>
<thead>
<tr>
<th>Constituency</th>
<th>Number of cases</th>
<th>APACHE Rating/divide</th>
<th>iCa/(mmol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surviving group</td>
<td>41</td>
<td>15.6±9.7</td>
<td>1.08±0</td>
</tr>
<tr>
<td>Death Group</td>
<td>14</td>
<td>23.4±5.2 (1)</td>
<td>1.01±0.06 (1)</td>
</tr>
</tbody>
</table>

compared to live groups, Dpco.,
Increase in calcium chelate, is one of the causes of blood calcium decline(2). Infection level related to decreased blood free calcium(3). According to the literature report, ICU Patient, Low serum calcium incidence 15%~88%,<. This study is, slow ICU Patient Low Normal for calcium deficiency. iCa level as clinical monitoring for critically ill patients. Important reference indicator for critically patients with low blood calcium prognosis bad, Tip in the treatment of critically ill patients, should be highly value, actively and reasonably correct hydro-electrolyte, acid-base balance disorder, Maintaining internal environmental stability should be a key factor for successful treatment. Tosummarize, early on APACHE rating vs. iCa level evaluation, to ICU Patient survival prognosis and treatment are important meaning.

References

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