ISOPROTERENOL-ADENOSINE VS. NITROGLYCERINE: CAN WE SUBSTITUTE ONE LONG PROTOCOL WITH TWO SHORT PROTOCOLS?

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Due to high time consumption of head-up tilt test (HUT) there are some attempts of shortening this procedure. The aim of this study is to compare diagnostic value of two short HUT: provocation with adenosine (+iso-proterenol) vs. full time HUT (Westminster’s protocol) followed by 20 min. with nitroglycerine.

Materials and methods: 29 patients (15F aged 29±11) with syncope supposed to be of neurogenic. All pts were examined with 3 tests (the sequence was random) of shortening this procedure. The aim of this study is to compare diagnostic value of two short HUT: provocation with adenosine (+iso-proterenol) vs. full time HUT (Westminster’s protocol) followed by 20 min. with nitroglycerine.

Results: At least one positive result of HUT was observed in 18 of 29 pts. 12 positive reactions were observed in provocatory tests: AISO (66% sensitivity score), 15 in HUT with NGT provocation (sensitivity 83%; 7 positive reactions during passive phase – sensitivity 39%). False negative result was observed in 6 short tests and 3 NTG tests. Among 9pts with positive reaction in both groups of tests in 3pts (33%) there was difference in types of vasovagal reaction.

Conclusion: Typical HUT with Westminster’s protocol and nitroglycerine provocation may depend on different frequency of hemodynamic parameter variability in test with adenosine and isoproterenol. Short tests may be used as an additional tool in case of negative classical HUT.

CLINICAL ASSESSMENT OF THE PRELIMINARY RESULTS OF THE SHORT TILT TEST WITH LOW DOSE OF ISOPROTERENOL

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Testing reactivity of autonomic system takes lot’s of time. It is under investigation to find method of provocations to shorten it.

Aim: Preliminary assessment of clinical value of shortened active HUTT after with low dose of isoproterenol (0,24μg/kg of body weight/min).

Materials and methods: 23 patients (19F medium age 33, SD 13). All the patients had during the same day: prolonged passive test (60min.) or 20min. test with nitroglycerin proceeded with 45 min. passive phase (NGT) and 20 min. test with low dose of isoproterenol (ISO). 16 pts (including all with negative result) had another HUTT (different protocols).

Results: Vasovagal syndrome was diagnosed in 20 patients, tilt induced sinus tachycardia (TIST) in 1 patient. Neurocardiogenic cause of syncope was excluded in 7 patients. During HUTT syncope occurred in 10 patients (sensitivity 50%), negative result – 3 (1 real negative), in 1 patient occurred syncope due to hypervenodynamic vs. nitroglycerin (VVS excluded in another tests). Concordance of HUTT results was achieved in 7 patients (type 1 – 4 pts, type 2 and TIST – 1 pt), two different types of reactions (ISO vs. NTG) occurred in 2 patients (1 vs.2 and 1 vs. 3). Among patients with negative HUTT ISO, type 1 reaction was in 3pts, type 2 – 5, type 3 – 2.

There was no significant adverse reactions of the drugs.

Conclusions: The sensitivity of the shortened head up tilt test with 12mg of adenosine in our group was 29,4%.

HEMODYNAMIC CURVES CHARACTERISTIC DURING FIRST MINUTE OF TILTING IN VASOVAGAL PATIENTS

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We have proved significant decrease of hemodynamic parameters like stroke volume (SV) and cardiac output (CO) during first minutes of head-up tilt test (HUTT) in patients with vasovagal syncope. We advance a hypothesis that it may depend on different frequency of hemodynamic parameter variability in these two groups of patients.

Aim: The aim of our study was to compare the sinusoids of SV and CO at the beginning of HUTT in vasovagal and non-vasovagal patients.

Materials and methods: 26 patients (26 women and 16 men) aged 36±16 were subdivided in 2 groups on the base of HUTT result: positive ones (HUTT+) – 12 pts and the control group (GK) – 11 pts. During all study we registered one channel of ECG using Holter method and measured SV and CO using impedance cardiotherapy by means of Reoncorder. Curve of SV and CO value for each patient was drown. We calculated the time of the first positive peak of sinusoidal curve.

Results: The first peak of SV appeared at 12±18s (all ≤20s) of HUTT in patients with vasovagal syncope and at 35±18s (all ≥30s) in control group (p=0,0018). The first peak of CO appeared at 11±6s (all ≤25s) of HUTT in patients with vasovagal syncope and at 40±17s (all ≥25s) in control group (p=0,0018).

Conclusion: Different characteristic of SV and CO curves was observed during first minute of HUTT in patients with vasovagal syncope and healthy ones.

VALSALVA MANEUVER USING BILATERAL TRANSCRANEAL DOPPLER MONITORING IN PATIENTS WITH NEUROCARDIOGENIC SYNCOPE

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Previous studies have shown that patients with neurocardiogenic syncope have alterations in cerebrovascular autoregulation just before syncope. A deep diacolic notch followed by a marked drop of diacolic middle cerebral artery

B126 Eurospac European Supp, Vol. 4, December 2003
blood flow velocity observed during transcranial doppler (TCD) monitoring
before syncope, as seen during the head-upright tilt table test (HUT). In order
to investigate changes of the cerebral blood circulation during Valsalva maneu-
ver (VM) we studied 68 consecutive patients (P) with assumed vasovagal
syncope and 20 apparently healthy subjects used as controls. VM was performed
in a supine position during TCD monitoring in all P before and after head-upright tilt table test. All healthy P showed a lowering in cerebral
cerebral blood flow velocity during phase IIA with recovering during phase IIB and
overshooting in phase IV after VM. All of them had a negative HUT. Eight out of 20 healthy patients had a positive passive HUT.
This eight cases showed a significant alteration during VM with a deepening of
the diastolic notch during phase IIA before HUT. The remaining 60 required
sensibilization with isosorbide dinitrate, 32 of them had a positive HUT after
sensibilization with alteration during VM. Thus, P who suffer neurocardiogenic
syncope show specific changes in cerebrovascular autoregulation during phase
IIA of VM, suggesting relative hypovolemia. Only those with a positive VM
will have a positive passive HUT.

Conclusions: This study suggest that VM is a useful noninvasive test for
identifying P with suspicion of neurocardiogenic syncope.

P-259 HEAD-UP TILT (HUT) IS SAFE IN OLDER PEOPLE
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There are limited studies assessing safety of HUT in older people. Two series
each with less than 200 subjects over 65 reported no adverse events but that
older people tolerate the procedure less. Response to HUT in older people may
be influenced by the impaired pathophysiological response to orthostatic stress
with age and the higher prevalence of comorbidity.

Aim: To examine the safety of HUT in a large series of patients over 60
years of age and to compare haemodynamic responses to unprovoked and glyceryl
trinitrate (GTN) provoked HUT.

Methods: We reviewed 1969 consecutive HUT in those aged over 60 be-
tween 1991-2001. A positive test was systolic blood pressure fall >50mmHg
below baseline after the fourth minute of the test ± heart rate change. Adverse
events were cardiac or neurological. Patients were stratified by age (61-75
(1096) and >76 yrs (873)), 24 were aged over 80. Results are expressed as
mean±SD.

Results: 1495 drug free and 474 GTN provoked HUT records were studied.
Comorbidities included: hypertension (16%), IHD (15%), CVD (7%), IAF (5%),
CCF (2%), diabetes (4%). In the 61-75 group the number (%) of positive
unprovoked HUT was 16% (those>76:27%). The proportion of positive tests was
higher in the group with GTN provocation (p<0.01) 61-75(45%)-76>75(44%).
Blood pressure decreased significantly lower (p<0.01) in both groups (61-75;
69±75mmHg(20), >76:62±24) during HUT with GTN provocation, but nadir
heart rate was no different. There was only one reported cardiovascular
and neurological complications. A 77 year old lady developed atrial fibrillation
during unprovoked HUT.

Conclusion: This study demonstrates the safety of HUT in older people and
those with comorbidity.

P-259 THE EFFECT OF HEAD-UPRIGHT TILT TABLE
TESTING ON QT DISPERSION
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Background: Head-up tilt testing (HUT) increases QT dispersion by auto-
nomodulation in healthy subjects. However the effect of tilt testing on QT
 dispersion in patients with unexplained syncope has not been evaluated widely.

Methods: Thirty-two patients with history of unexplained syncope sched-
uled to undergo HUT were enrolled in the study (mean age 28 years, 26
men). Of the study patients, 18 were considered to have a positive HUT test
while 14 had a negative test. In patients with a positive HUT, the test was
immediately discontinued. Twelve lead surface ECGs were obtained at baseline
and several post-HUT time points. Minimum, maximum QT interval and QT
 dispersion dispersion (QTd= Maximum QT interval - Minimum QT interval)
were calculated.

Results: Results are shown in the table. The maximum QT interval and QTd
were significantly reduced at the onset of syncope or presyncope as compared
to baseline (p<0.05) in HUT positive group. In contrast, increased maximum
QT interval and QTd were found at the end of test in patients with negative
HUT.

Conclusions: Autonomic modulation induced by tilt table testing effects
the maximum QT interval and QT dispersion. Decreased maximum QT interval
and QT dispersion response might be due to decreasing sympathetic tone and/or increasing
vagal tone in patients with positive tilt table testing.

P-260 A NEGATIVE TILT-TABLE TEST CAN BE PREDICTED
BY MEASURING EARLY HEART RATE CHANGES
DURING THE FIRST 10 MINUTES OF THE TEST
IN PATIENTS WITH A HISTORY OF SYCONE
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Background: A recent study showed that changes in heart rate (HR) of less
than 15 beats per minute from baseline during the first 6 minutes of a tilt-table test
at a 60 degree incline strongly predicts a negative tilt-table test in patients
without structural heart disease. We retrospectively reviewed 110 consecutive
tilt-table tests including those of patients with history of syncope at a higher
tilt-table angle.

Methods: The difference between maximal HR during the first 10 minutes of
tilting and the average of at least two baseline HR measurements was used to
study the correlation with subsequent syncope during the same test. Tilt-table
angle used varied from 70 to 90 degrees (80 degrees in 89% of the tests).

Results: There was a highly significant correlation between non-occurrence of
syncope and a rise in HR of less than 19 beats per minute during the first
30 minutes of tilt-table tests in the entire cohort (sensitivity 75.7%, specificity
65%, OR 9.66, CI 3.9-23.7, p<0.001). However, it only applies to patients with
definite history of syncope were considered, the sensitivity of a negative tilt-table test
would have been the strongest (sensitivity 93.3%, specificity 66.7, OR 28, CI
2.65-295.7, p=0.001).

Conclusion: These data indicate that even in a routine setting using simple
parameters in a non-select population and a higher tilt-table angle, an increase
in heart rate of less than 19 beats per minute during the first 30 minutes of
a tilt-table test is an excellent negative predictor of syncope.

P-261 SIMULTANEOUS A/V-EXTRASTIMULATION: A NEW
TECHNIQUE TO DISTINGUISH AV NODAL REENTRY
FROM ORTHODROMIC AV REENTRY TACHYCARDIA
WITH SEPTAL ACCESSORY PATHWAYS
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Diagnosis of SVT with retrograde concentric activation may be challenging.
The preexcitation index (PI) was introduced to quantify the degree of prema-
tureity of single or double ventricular extrastimuli (VE) required to effect atrial
eritlation. The purpose of our study was to determine the diagnostic value
of simultaneous A/V-extrastimulation (AV-E).

Methods: 48 pts (40 AVNRT, 4 atypical forms and 11 AVRT, 5 PS right,
2 PS left, 4 MS) underwent EPS and ablation. Pacing was performed with a
Bloom stimulator (DTU 215). During sustained SVT, single, double and A/V-
extrastimuli were coupled to the last sensed ventricular beat until termination
or refractoriness occurred. The PIs were calculated as previously described.

Results: In AVNRT, only 1% (4/40) of pts demonstrated atrial preexcita-
tion with single VE (PI 153±52ms), and 55% (16/29) with double VE
(PI 170±50ms). AV-E resulted in preexcitation in 11% (4/38) (PI 118±35ms).
AVRT, all but one patient (91%, 10/11) demonstrated atrial preexcitation with
single VE (PI 52±20ms) and all but one (100%, 1011) with double VE (PI 95±54ms).
AV-E was applicable in 50% (5/10) of pts with AVRT at a PI of 24±28ms.
However, this technique was not applicable in the other 50% owing to loss of
capture either in A or V. AVRT was terminated by single VE (p<0.0001) and
this demonstrated atrial preexcitation (p<0.0001) more frequently than AVNRT.
In contrast to AVRT, AV-E was applicable in all cases of AVNRT except one
slow/slow type (p=0.0008) and resulted in a significant longer PI (p=0.007).
There was no significant difference in mean CL between AVNRT and AVRT
(331±62 vs 332±45, respectively, p>NS).

Conclusions: Simultaneous AV-E is considered a helpful tool for differ-
cential diagnosis of SVT with concentric activation sequence. The PI obtained
with this technique allows clear distinction of tachycardia mechanism without
overlap. The sole observation that AV-E is not applicable during SVT favours
the diagnosis of AVRT in all likelihood.