1079

PATIENTS WITH ARTIFICIAL BUT NOT BIOLOGICAL HEART VALVE
PROSTHESIS PRESENT A HYPERCOAGULABILITY RELATED TO
THE INTENSITY OF ANTICOAGULATION. V. Pengo, M. Boschello,
P. Peruzzi, D. Pagotto, L. Schivazappa, S. Dalla Volta.
Cattedra di Cardiologia, Università di Padova, 35100 padova, Italy.

Long term anticoagulant therapy is mandatory for patients with
artificial heart valve prosthesis and is suggested for some patients
with biological heart valve prosthesis. Oral anticoagulants reduce
but not abolish thromboembolic complication in these patients. They
act lowering the level of vitamin K-dependent coagulation factors
and that in turn should result in a depression of "in vivo" thrombin
formation. Fibrinopeptide A (FpA) is a good marker of thrombin
formation and therefore we ascertained in several occasions the
thrombin formation in 43 patients with artificial and 18 with biolo-
gical heart valve prosthesis, all the patients being on oral anti-
coagulant treatment at least from 1 year. FpA was significantly
higher in patients with artificial (determinations n=138) with respect
to biological (n=73) heart valve prosthesis (p 0.01). The FpA level
in biological valves was close to that obtained in 22 not anticoagu-
lated healthy subjects. When we divided FpA values in artificial
heart valves according to the intensity of anticoagulation, we
obtained a decreasing FpA mean levels with the increase of the
degree of anticoagulation. In particular FpA values with an INR 4.5
where close to values obtained in healthy subjects. These data
support the concept that patients with artificial heart valves are
at higher risk of thromboembolism and therefore the intensity of
anticoagulation should be different with respect to biological
valves and probably a little higher than that recommended at the
Leuven Consensus Conference.

1080

A PROSPECTIVE RANDOMISED CONTROLLED STUDY OF MINI-DOSE WARFARIN
PROPHYLAXIS OF DEEP VEIN THROMBOSIS IN MAJOR SURGERY. A.
McKernan, J.M. Thomson and L. Poller. UK Reference Laboratory
for Anticoagulant Reagents and Control, Withington Hospital,
Manchester, UK.

A prospective randomised study has been undertaken to assess
the clinical effectiveness of oral anticoagulation using mini-
dose warfarin (1 mg daily for 2-4 weeks before major gynaecol-
ogical surgery) compared with conventional oral anticoagulant
prophylaxis and an untreated randomised control group. The
conventional oral anticoagulant prophylaxis was based on a
therapeutic range of 1.5 - 2.0 INR at the time of operation and
2.0 - 3.0 INR post-operatively. Overall the mini-dose warfarin
group showed no pre-operative prolongation of the prothrombin
time with the Manchester Reagent although a minority of patients
showed a 1-2 second prolongation of the prothrombin time before
operation. Post operatively the mini-dose warfarin group showed
an exaggerated prolongation of the prothrombin time which
normally occurs after operation and was observed in the untreated
controls. Factor VII assays paralleled these findings. Mini-
dose warfarin, while not prolonging the prothrombin time before
operation, resulted in delayed platelet aggregation with the
Chandler's tube technique in almost all patients.

The incidence of deep vein thrombosis has been reduced in both
mini-dose and conventional dose oral anticoagulant series
compared with the untreated group. It appears that the minimal
changes in the prothrombin time, factor VII and platelet aggreg-
ation tests, observed in the mini-dose warfarin group, may offer
sufficient protection against post-operative thrombosis in a
moderate risk group undergoing abdominal or pelvic surgery.

1081

CALIBRATED PLASMA PROCEDURE AND INR FOR PT STANDARDIZATION. DATA
FROM THE FRENCH ETALONORME QUALITY CONTROL SURVEYS.
GOGUEL A., HOUBOUYAN L. and ROUSSI J.
Etalonorme-Hematology - Ambroise Paré Hospital - F.92100 BOULOGNE

One of the aim of the survey conducted in last december 1986
was to assess the efficacy of 2 procedures of standardization :
1) the INR system, derived from thromboplastin calibration and
adopted in 1983 by the WHO,
2) the Reference Calibrated Plasmas (RCP) procedure, evaluated
on large scale, through French interlaboratory trials (1977-85),
exhibiting net improvement of the dispersion of overall data.
Labs were asked to perform with their local thromboplastin and
method, the PT of a human lyophilized plasma 86 H/I, originated
from long term antivitamines-K (AVK) treated patients. Results
were expressed *in time ; *in % activity, according to the tradi-
tional procedure based on saline dilutions of normal plasma ; *in
INR using the ISI of the local reagent calibrated by the manufac-
turer. Calibrated plasmas procedure allow the determination of
corrected activity ; *in % activity and INR, according to the
linear calibration curve obtained from the PT of 2 reference cali-
brated plasmas with determinated activities in INR and % acti-
vity. These RCP were provided with and tested under the same con-
ditions as plasma 86 H/I6 (2 systems of RCP : AVK and artificial-
ly depleted).
Statistical analysis shows that the "RCP" procedure leads to
the best improvement of the interlaboratory variation for the
overall data, and the best uniformization of mean results, what-
ever the way of expression (%, INR), the thromboplastin brand,
and the method of PT testing. Results play also in favour of a
system of AVK reference plasmas, giving a better grouping than
the artificial calibrated plasmas. The INR system nevertheless
provides a common scale of data reporting, but might hold profit
from an efficient procedure of standardization, such as the cali-
brated AVK plasmas procedure.

Procedure Expression	Usual % Act.	Calibrated plasmas		INR syst.	
		% Act.	INR		
AVK Ref. Plasmas	14.1	8.9	12.5	18.5	1457 labs
Artif. Ref. Plasmas	14.8	12.3	15.2	20	1000 labs

Coefficient of variation (CV) expressed in %. Overall data PT of
86 H/I. French Etalonorme Survey.

1082

USE OF INR FOR THE EXPRESSION OF PT IN PATIENTS UNDER ORAL
ANTICOAGULANTS : COMPARISON OF RESULTS OBTAINED WITH FIVE
THROMBOPLASTINS AND THREE DEVICES.
J.H. Roussi, D. François, J. Delemme, A.F. Goguel.
Immuno-Hematology, Ambroise Paré Hospital - F.92100 BOULOGNE

The aim of our study is to know if INR (International Nor-
malized Ratio) is really the best way to express PT
(Prothrombin Time) in patients under oral anticoagulants (AVK).
In this way, PT of 85 patients treated by AVK and 30 normal
controls were determined with 5 different reagents and three
devices : manual technic, KC10 (AHS Dade), Coag A Pet 200
(Gal Diagnostics, Organon). The reagents were : Thromborel S
(Behring) extracted from human placenta, Thrombotest
(Nyegaard) from ox brain, and 3 rabbit thromboplastins : Neo-
plastine (Diagnostica Stago), Thromboplastine calcique (Bio-
Merieux), Simplastin + (Gal Diagnostics). The results are
expressed in seconds, percentage according to the dilution
curve and INR with ISI given by the manufacturers.
Analysis of results shows :
- Influence of the technic : Whatever the technic is, mean
results obtained with the same reagent, expressed in % are
very close ; expressed in INR mean results are dispersed with
all the reagents, ex :

Stago	%	INR
Manuel	33.4	3.4
KC10	33.8	2.1
CAP	35.6	2.6

- Influence of the reagent : Results performed with the
same technic whatever the reagent is expressed in INR are very
close, whereas in % the dispersion is large.

KC10	Thrombotest	Behring	Stago	Merieux	GD
%	14.1	26.1	33.8	37	44.25
INR	2.9	3	3.1	2.9	2.9

Analysis of variance and Student test show highly signifi-
cant differences between all reagents for expression in %, whe-
reas expressed in INR (KC10) the difference is not statistical-
ly significant.
INR leads an improvement in the dispersion of results but
it seems necessary to have at least two ISI for each reagent,
one determined by manual technic or device like KC10, the
other one determined on photo-optical device.