

ABSTRACT: CORONARY ANGIOGRAPHY (CA) AND PCI IN AUSTRIA DURING THE YEAR 2005 (Registry-Data with AUDIT 2004 through 2006)

49,791 diagnostic coronary angiographies (CA) and 18,591 percutaneous coronary Interventions (PCI's) were done in Austria during the year 2005. The country hosts 32 centers for diagnostic studies in adults, all of them perform PCI as well, nine out of 29 centers have surgical "back up" in the same house. There is an increase of 9.1 % concerning coronary angiography and of 11.1 % in PCI compared to 2004, when Austria had 30 CA-centers. During 2006 an additional new center with PCI was established. The ratio PCI/CA has significantly increased from 2001-2005 from 31.1% to 38.1% ($p < 0.001$). 77 % of PCI were done during the diagnostic study (ad hoc).

PCI during the early hours of myocardial infarction, or for ongoing myocardial infarction (acute-PCI) was performed in 4,328 cases, this is a significant increase from 11.7% during the year 2002 to 23.3% of PCI in 2005 ($p < 0.005$). Overall Mortality 2005 after PCI was reported in 1.12%, after elective (non-acute) PCI in 0.28% (40/14,263) and after acute-PCI for myocardial infarction in 3.88% (168/4,328). After acute-PCI 59/3,849 (1.53%) of the patients died having an infarction without, and 109/479 (22.8%) of the patients died after acute-PCI having an infarction with shock before (mortality did not change significantly compared to 2003). Emergency bypass surgery rate after PCI again was 0.12% and 3 out of the 22 patients died after emergency surgery due to failed PCI.

In 16,880 cases stents (91 % of all PCI cases) were implanted. Drug eluting stents (DES) were used in 66.4% of stent-cases in 2005, compared to 22.4% during 2003 ($p < 0.001$). The relative usage of puncture site closing devices increased significantly from 48.3% of PCI in 2003 to 65.0% in 2005 ($p < 0.001$). During 2003/2004/2005 4.9%, 5.5% and 4.9% ($p = 0.014$) of all PCI-cases were done due to in-stent-restenosis, brachytherapy was done only three times in 2005. The usage of IIb/IIIa platelet antagonists during 2003/2004/2005 shows a percentage of 22.1%, 17.8% and 19.4% of all stent-cases ($p < 0.001$). Brachial punctures reached 2.2%, 1.7% and 3.6% of PCI in 2003/2004/2005.

Audit was performed 19 times during 2004-2006 in 18 of the 32 Austrian cath-labs. International comparison shows Austria under the top nations with 6,009 CA and 2,290 PCI per one million inhabitants, as well as concerning the ratio PCI/CA and DES/stent during the year 2005. With help of <http://iik.msig.at/> communication was improved.

Tabelle 1) Typen der statistischen Auswertung

	ALLE Zentren (gepoolt)	NUR Zentren MIT Meldung
Nur Jahr 2005	Typ 1	Typ 2
Jahre 2004 bis 2005	Typ 3	Typ 4
Jahre 2001 (bzw. 2002 oder 2003) bis 2005	Typ 5	Typ 6

Tabelle 2) Struktur der Herzkatheterversorgung in Österreich 2001-2005.
Original Fragebogen der European Society of Cardiology (ESC). / Structure of
supply with cardiac catheterization in Austria 2001-2005

	Diagnostische Koronarangiographie (CA) 2001-2005	PTCA=PCI 2001-2005
Anzahl der Zentren	/31/31/31/30/32	/29/29/29/29/32
Anzahl der Herzkathetertische	/39/40/42/42/44	/37/38/40/41/44
Anzahl der Ärzte	/170/191/192/196/207	/102/127/129/141/171
Zentren mit Herzchirurgie	9	9
Zentren mit Datenbank	/25/25/27/29/28	
E-mail und/oder Internetadresse	/27/25/20/18/18	

Tabelle 3) Intracoronare Interventionen in Österreichs Herzkatheterlabors 2003-2005.Original Fragebogen der European Society of Cardiology (ESC) / Country Summary: Catheter Interventions, European statistics 2003-2005; Austria

	2003: n (%)	2004: n (%)	2005: n (%)
Coronary angiography (Cases)	43.644	44.742	48.791
PCI (Cases)	15.056 (35%)	16.738 (37,4%)	18.591 (38,1%)
--Multivessel PCI in one session	2423 (16,1%)	3041 (18,2%)	3358 (18,1%)
-PCI for infarction (acute PCI)	2154 (14,3%)	2676 (16,0%)	4328 (23,3%)
-PCI during diagnostic study (ad hoc)	12279 (82%)	14180 (85%)	14323 (77%)
-Radial or brachial approach	338 (2,2%)	288 (1,7%)	677 (3,6%)
-Puncture site closing device	7307 (48,5%)	9834 (58,6%)	12076 (65,0%)
-PCI complication=infarction	133 (0,88%)	131 (0,78%)	154 (0,83%)
-iatrogenic left main artery dissection		6 (0,036%)	9 (0,048%)
-Emergency CABG-OP	19 (0,13%)	22 (0,13%)	22 (0,12%)
-In-hospital deaths	133 (0,88%)	156 (0,93%)	208 (1,12%)
Stent(cases)	13.113 (87%)	14.586 (87%)	16.880 (91%)
-left main stents	152 (1,16%)	216 (1,48%)	279 (1,65%)
-Multiple stents	3140 (24,0%)	3436 (23,6%)	4050 (24,0%)
-drug eluting stents (DES)	2938 (22,4%)	6430 (44,1%)	11209 (66,4%)
--Sirolimus	1429	2501	3834
--Tacrolimus	233	602	800
--Paclitaxel	1276	2404	4219
-- others or not defined	-----	923	2356
PCI for instent Restenosis (% of all PCI)	737 (4,9%)	921 (5,5%)	905 (4,9%)
Directional atherectomy	15	5	0
Rotablator	236	158	221
Brachytherapie	101	28	3
Clot catcher/ remover	173	213	380
Intracoronary pressure	242	312	709
Intracoronary ultrasound (diagnostic)	604	629	734
Intra-aortic balloon pump during PCI	101	134	207
Other devices	55	158	84
Platelet glycoprotein IIb/IIIa antagonist (% of all PCI)	2.896 (19,2%)	2.597 (15,5%)	3280 (17,6%)
Thrombininhibitor (% of all PCI)			203 (1,1%)
CLO SUR P.A.D.	641	1065	537

Tabelle 4) Parameter, die Inhalt der gesamteuropäischen Statistik sind, aber keinen unmittelbaren Zusammenhang mit Koronarangiographie plus KHK aufweisen.(Österreich 2003-2005)/ Further Parameters which are part of the European statistics but are not immediately connected to coronary angiography plus coronary artery disease. (Austria 2003-2005)

	2003	2004	2005
Transmyocardial laser revascularization	0	13	0
Alcohol ablation for septal hypertrophy	4	6	15
Myocardial biopsies	206	203	209
Diagnostic electrophysiology	1.816	2.037	1.935
Elektrophysiologic ablation	1.194	1.320	1.502
NOGA Mapping	16	26	26
Pacemaker-Implantation in cathlab		1.111	1.115
Mitral valvuloplasty (adults)	14	12	24
Aortic valvuloplasty (adults)			6
Defect closure by catheter (adults)	243	269	319
Carotid artery intervention in cathlab	104	130	171
Iliac or leg artery intervention in cathlab	152	144	152
Renal artery intervention in cathlab	75	117	142
Left atrial appendage closure	7	4	13
Catheter based stem cell therapy	21	16	23

Tabelle 5) Daten aus Österreichs diagnostischen Herzkatheterlabors im Jahr 2005 und weitere, nicht in der Europäischen Statistik enthaltene, PCI-Daten/
Austrian diagnostic parameters which are not part of the European statistics and further PCI- parameters of the year 2005

	Diagnostischer Herzkatheter	PCI	
		NICHT AKUT	Akut wegen Myokardinfarkt
Koronarangiographien (Gesamtanzahl)	48.791		
- Todesfälle	43		
PCI (alle koronaren Interventionen)		14.263	4.328
- Todesfälle		40	168
Eingriffe im Infarkt OHNE Schock	4.074		3.849
- Todesfälle	12		59
Eingriffe im Infarkt MIT Schock	519		479
- Todesfälle	6		109
Myokardinfarkte (als Komplikation)	15	154	
- Definiert durch Q - Zacke	1	14	
- Definiert durch Troponin oder CK	10	82	
Reversible neurologische Komplikationen	37	6	4
Irreversible neurologische Komplikationen	4	3	2
Geräte zum Punktionsverschluss	11.575	8.656	1347
Periphere Gefäßkomplikationen (jede Definition)	353	167	38
- Mit Operation oder mit Transfusion	102	26	11
- Mit Thrombininjektion	74	63	6
Kontrastmittel-Reaktionen	75	20	
Linksventrikuläre Angiographie	19.952		
Rechtsherzkatheter	3.355		

Tabelle 6) Vergleich der PCI Daten Europas 2004 (15,16) mit jenen Österreichs im Jahr 2005/Comparison of PCI data in Europe 2004 with Austria in 2005

Angaben in %	Europa 2004	Österreich 2005
Mehrfäß-PCI	17	18,1
PCI im akuten Infarkt	20	23,3
„ad hoc“ PCI	66	77,0
PCI-Mortalität	0,5	0,28-1,12*)
Notfall OP post PCI	0,2	0,12
Myokardinfarkt durch PCI	1,0	0,83

*) je nach Definition „akut“ oder „akut plus nicht-akut“

ANHANG : Österreichische Zentren 2006 und jeweils Datenverantwortlicher (Zentren mit Monitorvisite/Audit 2004/2005 sind blau, mit Monitorvisite 2006 sind rot gekennzeichnet)

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- 3) Linz, Krankenhaus der Elisabethinen, Innere Medizin
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- 4) Graz, Universitätsklinik, Kardiologie, Innere Medizin
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- 10) Villach, Innere Medizin
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