

# NEUROIMAGE

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MAI 2013

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MUHC-MNH

VOLUME 28, NUMBER 1  
MAY 2013

## AURORAL DIAGNOSIS

### IN THIS ISSUE ...

Hispania

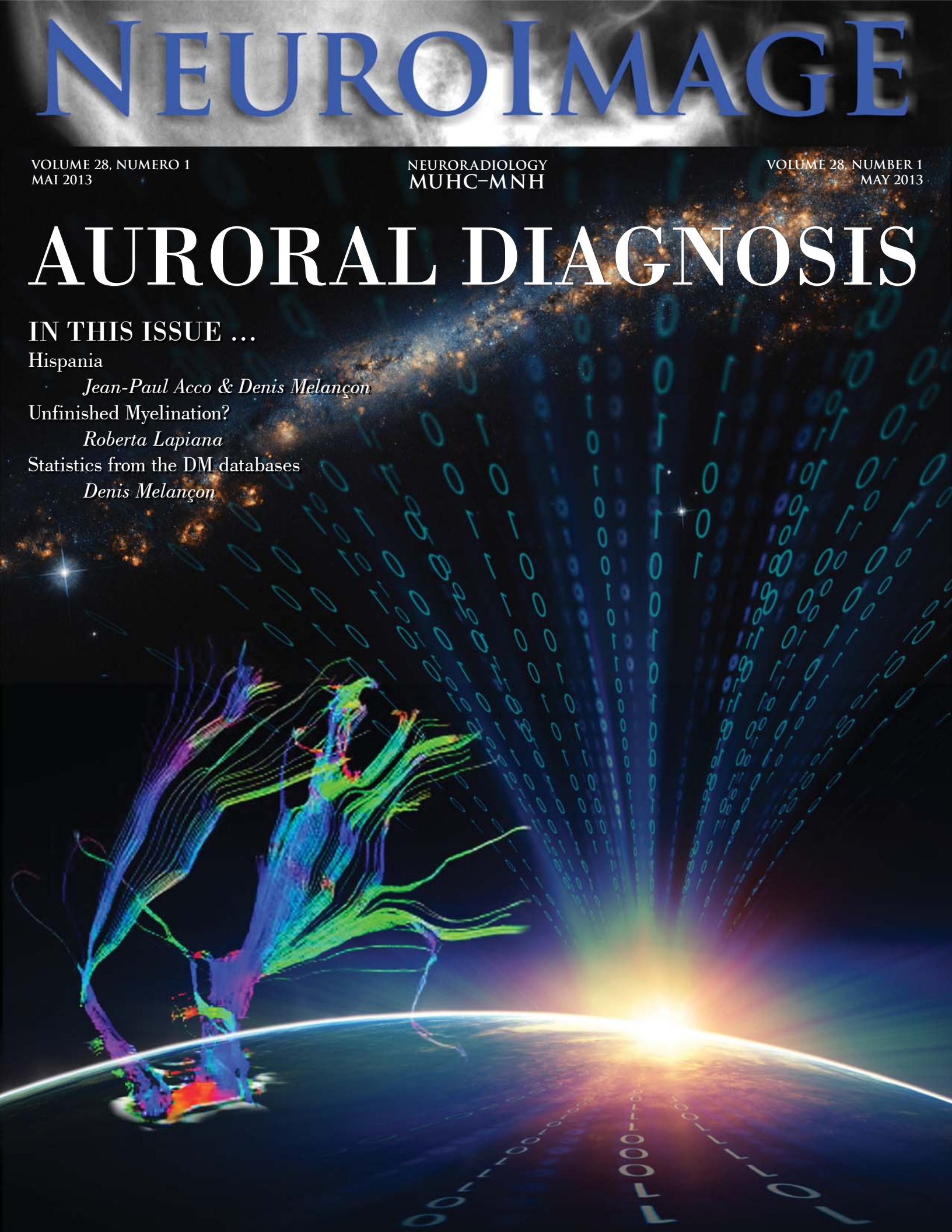
*Jean-Paul Acco & Denis Melançon*

Unfinished Myelination?

*Roberta Lapiana*

Statistics from the DM databases

*Denis Melançon*





此致

Greetings

Cordialmente

Respetos

Saudações

Bäst Hälsningar

Herzliche Gruesse

Saluti affettuosi

Namaste

O Genki De

Amicalement

敬意

But all so soon as the all-cheering sun  
Should in the furthest east begin to draw  
The shady curtains from Aurora's bed,  
Away from the light steals home my heavy son...

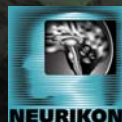
From Shakespeare's *Romeo and Juliet* (I.i),  
Montague says of his lovesick son Romeo

In Greek and Roman mythology Aurora was a celestial deity. She was the goddess of the dawn, and daughter of Hyperion and Theia, or of Terra and Titan, the sister of the sun and moon, and mother of the stars and winds. In statues Aurora is depicted as goddess of the morn riding in a rose-coloured chariot, drawn by white horses. She is usually covered with a veil, with the morning star over her head.

*Denis Melançon*

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# HISPANIA

## DENIS MELANÇON

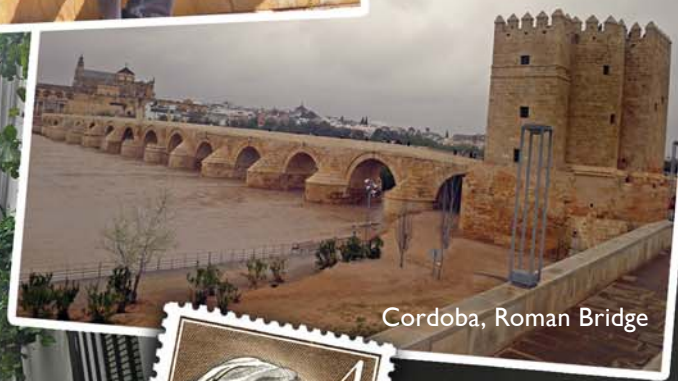
I was vacationing on the Costa del Sol from March 19 to April 16. As usual during my vacations, I took many pictures of places I visited, namely Estepona, Malaga, Marbella, Mijas, Puerto Banus. And also during excursions to Ronda and Cordoba, learning from those places, that the first bullfighting took place in Ronda, that Cordoba was the home of Seneca, Maimonides and Averroes, three great minds and philosophers of their times.



Marbella



Cordoba, Medina



Cordoba, Roman Bridge

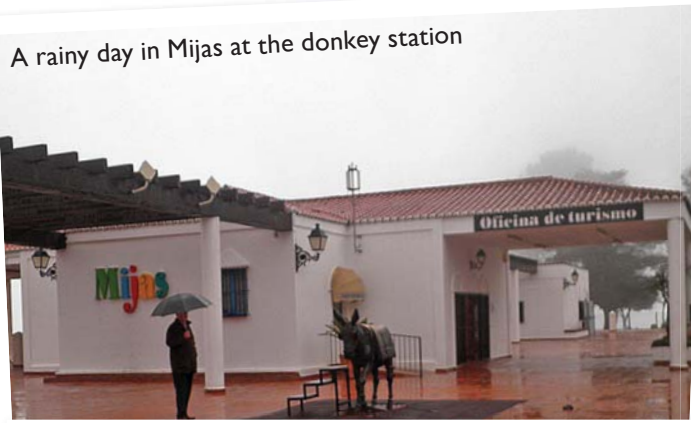


Cordoba, Maimonides Statue





A rainy day in Mijas at the donkey station



Malaga, Roman Theatre



A typical street in Estepona



Sur le plage, Estepona



Flamenco performance in Mijas





Centro de Arte Contemporáneo, Malaga



The hospital that treated Dr. Melançon in Estepona



The Beach in Estepona



Dali sculpture, Marbella



Paseo marítimo, Estepona



The pool in Estepona

I found more charm to the Paseo Marítimo of Estepona than that of Marbella-Puerto Banus. The old city in Marbella is worth visiting, the Dali's sculptures at Playa de Venus are a marvel. Mijas and its donkeys is a very typical small village, where flamenco is danced in the park just in front of the Oficina de Turismo. All in all, many pictures for a souvenir of this nice region of Spain, Andalusia.



# TERMINAL ZONES OF MYELINATION: UNUSUAL MRI FINDING IN ADULT SUBJECTS

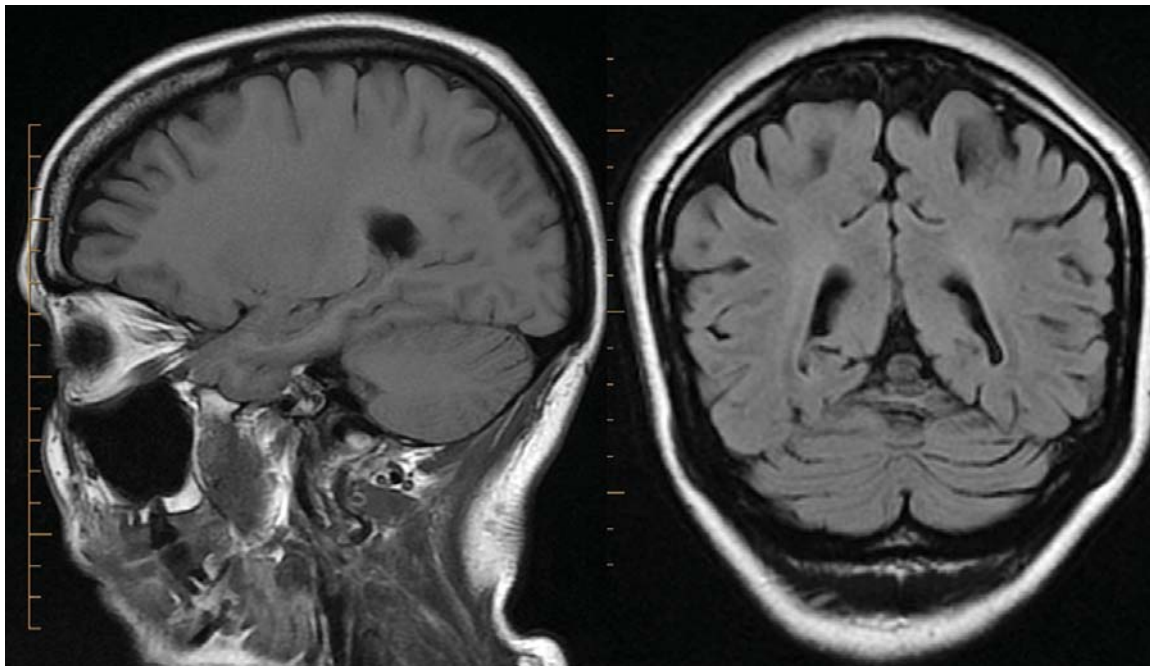
ROBERTA LA PIANA & DENIS MELANÇON

**A**bnormal T2 hyperintense signal in the supratrigonal zones is an atypical finding in adult patients. When identified, it raises the question of whether we are presented with a pathological or physiological process. In particular, could this finding represent terminal zones of myelination?

The peritrigonal zones have been reported to be the last areas to myelinate and this can be seen as persistent T2-hyperintense signal even in adulthood [1,2]. However, in other longitudinal studies performed in children aged 20-40 months the supratrigonal zones presented a normal myelination while the frontotemporoparietal subcortical regions were the last to reach a complete deposition of myelin [3].

Unmyelinated white matter appears hypointense in T1-weighted sequences and hyperintense in T2-weighted sequences. These signal characteristics are due to the very high water content and low fat concentration in the immature myelin. Myelination consists of progressive deposition of lipids in the myelin sheaths and reduction of water content. Myelination progresses faster in T1 sequences than in T2, because the deposition of lipids (responsible for the increase in T1 signal) is more rapid than the reduction in water content (responsible for the decrease in T2 signal) [1,3]. Consequently, the appearance of the supratrigonal zones in T1 sequences will provide important information to orient the diagnostic process. Differential diagnosis of T2-hyperintensity in the supratrigonal zones can include perivascular spaces [3], which are nonetheless easily distinguished based on T1 and FLAIR sequences. A demyelinating process should also be ruled out; again, the signal characteristics in the T1 sequences could help in the correct interpretation of the T2 findings.

The correlation with the clinical information is crucial for the correct interpretation of these findings. In our practice, we recently observed two adult patients that presented with abnormal T2-hyperintense signal in the supratrigonal zones (Figure 1 and 2). In one patient (Figure 2) follow

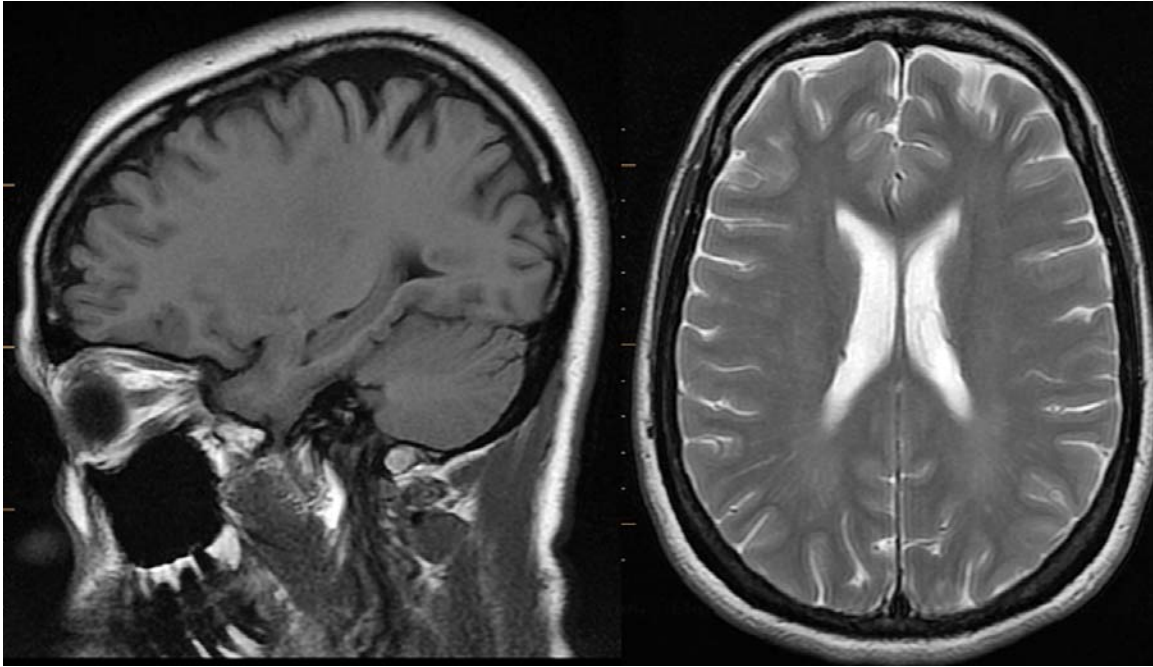


**Figure 1**

28 year old woman with generalized seizures since 2005; sagittal T1- (left) and coronal FLAIR T2 (right) - weighted MR images showing mild bilateral and symmetric T2-hyperintense signal at the supratrigonal zones. No signal abnormality is detected in the same regions in the T1 sequence.

up MR exams showed no modifications in the signal abnormalities over time (two years of follow up). Both patients underwent MRI of the brain in the context of epileptic disorder. No symptoms that could be related to the abnormal T2 findings were found in the clinical history; moreover, the remainder of the brain MRI was normal. In our two subjects, thus, the signal abnormalities were attributed to terminal zones of myelination.

Whether these imaging findings correlate more with neurological conditions or, in other words, whether the occurrence of this finding is higher in people consulting for neurological symptoms is not reported in the literature.



**Figure 2**

52 year old woman with history of seizures. Sagittal T1- (left) and axial T2- (right) weighted MR images showing mild bilateral and symmetric T2-hyperintense signal at the supratrigonal zones. These changes could represent terminal zones of myelination.

## References

- [1] Barkovich AJ. Concepts of myelin and myelination in neuroradiology. *AJNR Am J Neuroradiol* 2000; 21:1099-1109
- [2] Yakovlev, PI.; Lecours, A-R. The myelogenetic cycles of regional maturation of the brain. In: Minkowski, A. Editor. *Regional development of the brain in early life*. Blackwell Scientific; Oxford, UK: 1967. p. 3-70.
- [3] Parazzini C, Baldoli C, Scotti G, Triulzi F. Terminal zones of myelination: MR evaluation of children aged 20-40 months. *AJNR Am J Neuroradiol* 2002; 23:1669-1673



# WHAT DID I GET FROM CODING

DENIS MELANÇON

In 1978, after the use of the EMI Head Scanner for 5 years, I decided with my associate Saul Taylor to establish a coding system of our scans, a homemade program for the Xray diagnostic codes, and used a clinical code based on the SNOMED program. Example, patient scanned for Dementia (Snomed 5420) and diffuse brain atrophy found on scan (HA40). We then produced data that we used for statistics, We first collected it through secretarial manual help, but eventually acquired a Xerox computer to record on floppy disks. A few years later, the Neuro established a research computer program and we used it's facilities.

For Medicare statistics and billing purposes, we acquired the Carefile program and we started transferring our data on it. We have data on it since then (1991); more recently it has been duplicated by the Radimage program. Over the years because these changes in programs and in media transfers have been suboptimal, we lost some data. Still we managed to recuperate some that I can use.

1984 Epilepsy Book 57

34616	Deslandes René, 32, E.R.
34635	Lamothe Alain, 37, Mounette
34636	Bourque (Pion) Suzanne, 47, Rivillard
34644	Mackenzie Joan, 33, Sherwin
34653	Roboz Laszlo, 60, Rubin
34657	Sabourin Edgar, 75, Telbot
34666	Sicard Richard, 29, Rivillard
34676	Davinaut Denise, 44, Moiseux
34680	Dion Audri, 22, Woods
34682	Chartrand, Nicole, 28, Rivillard
34690	Senecal Linda, 18, Filiairault
34699	Wright Hazel, 61, Aubé
34702	Theberge Stephanie, 6, Auderman
34705	Critchfield Norman, 43, Francis
34709	Deslandes René, 33, Baxter,
34720	Bisson (Dupuis) Simons, 58, Meloche
34724	St-Hilard Lucie, 72, Duplessis
34731	Mousseau Fortunat, 70, Harkin
34735	Couture Jean Paul, 61, E.R. 3N
34737	Adderly Laurence, 34, RVH
34746	Hubert Louise, 33, 2E
34743	Marcotte Stève II, 2E
34749	Burgo (Malinowski) May, 23, 3R
34754	Courneau Chantal, 8, 2E
34765	Bourgeois Jean, 24, 2N
34766	Dubé Robert, 27, Francis
34780	Phillips Terrance, 32, Auderman
34796	Antoine Jean-Luc, 25, Rivillard
34799	Dextradours Jacques, 31, 3N
34807	Lavigne Denis, 26, Bellavance
34808	Pulford Robert, 33, "
34813	Doy Susan, 27, 4E

Medicare	Name	Cl	Dg	Xray	Exam	Chart	Date
PERR20542721	PERRAS ROLLANDE	542	HL1	389201	8250		02-MAR-1989
DES0505123114	DESROCHERS VIANNEY	542	HL1	389956	8250		19-MAR-1989
FRAH09121916	FRANKEURT HENRY	542	HL1	390209	8250		24-MAR-1989
PERLO4580514	PERREAULT LORETTE	542	HL1	390257	8250		27-MAR-1989
LIBE12542315	LIBERT FRANCOISE	542	HL1	390405	8250		30-MAR-1989
PAPM14091418	PAPILLON MARCEL	542	HL1	390424	8250		30-MAR-1989
LEWH17071111	LEWIS HENRI	542	HL1	391062	8250		12-APR-1989
HEBA20091218	HEBERT ALBERT	542	HL1	391239	8250		15-APR-1989
MORC41111719	MORIER CHARLES	542	HL1	391438	8570	103999	20-APR-1989
MORC41111719	MORIER CHARLES	542	HL2	391508	8250	103989	21-APR-1989
BROD07570618	BROWN DORIS	542	HL1	391962	8250	213259	01-MAY-1989
BEAA08570617	BEAUDRY ALPHONSINE	542	HL1	392241	8250		07-MAY-1989
AVEG14541212	AVERSA GRAZIA	542	HL1	392342	8250		09-MAY-1989
BLAA24540311	BLAIN AGATHE	542	HL2	392795	8250		18-MAY-1989
WEIL11552916	WEINBERG LEAH	542	HL1	393242	8250		20-MAY-1989
SCHM05572012	SCHONFELD MARIA	542	HL1	393510	8250		02-JUN-1989
CHAC13062612	CHARRON CHRISTIAN	542	HL1	393916	8250		11-JUN-1989
ENGV04512414	ENGLISH VICTORIA	542	HL1	394245	8250		17-JUN-1989
BEAA13541618	BEAUBIEN FEMINIS	542	HL1	394252	8250		17-JUN-1989
BAUC02980416	BAUMANN OSCAR	542	HL1	394273	8250		18-JUN-1989
CORH25582324	CORRAN MARGARET	542	HL1	394388	8250		20-JUN-1989
WOLM04082119	WOLOSHEN MIKE	542	HL1	394587	8250		26-JUN-1989
JAOV15021013	JAOVEN YVES-LOUIS	542	HL1	395562	8250		17-JUL-1989
WROL06102214	WRONG LEONARD	542	HL1	395975	8250		26-JUL-1989
DAUL21042513	DAUTEUIL LEONARD	542	HL1	396752	8250		14-AUG-1989
BROT18510817	BROWN THERESE	542	HL1	396966	8250		17-AUG-1989
PATV15122816	PATEL VITHALDAS	542	HL1	397426	8250		28-AUG-1989
PAGD06611311	PAGE DOROTHY	542	HL1	398719	8250		01-OCT-1989
FAVP20031710	FAVA PAUL	542	HL1	398783	8250		02-OCT-1989
MCGV18582318	MCGLYNN VIRGINIA	542	HL1	399070	8250		08-OCT-1989
CORM06531313	CORMIER MARIE	542	HL1	399861	8250		25-OCT-1989
EBEE27051413	EBERWEIN FEMINIS	542	HL1	400069	8250		12-NOV-1989
BEUC14581514	BOUDREAU CORINNE	542	HL2	400429	8250		04-NOV-1989
EAVE09542015	EAVES FLORENCE	542	HL2	400434	8250		10-NOV-1989
LEPA08522912	LEPAGE ALMA	542	HL1	400751	8250		11-NOV-1989
BOUC15562519	BOURASSA CLAIRE	542	HL1	400766	8250		11-NOV-1989
STOD19111919	STORY DONALD	542	HL1	400772	8250		11-NOV-1989
FLEG10621915	FLETCHER GLADYS	542	HL1	402099	8250		07-DEC-1989
HOUB33100717	HOULE BRUNO	542	HN2		8250		07-DEC-1989
HOUB33100717	HOULE BRUNO	542	HN2		8250		08-DEC-1989
ENTM12620917	ENTER MARGOT	542	HN2		8250	104770	02-NOV-1989
OUIR41051019	OUMET ROBERT	542	HN2	386374	8250		30-DEC-1989
RUDM23550816	RUDACOVITCH MARIAN	542	HN2	388206	8250		10-FEB-1989
LAFJ13011418	LAPRADE JOSEPH	542	HN2	388948	8250		25-FEB-1989
TRER20872519	TREPANIER THERESE	542	HN2	388958	8250		25-FEB-1989
STEC41560215	STEPHENS CLAIRE	542	HN2	389590	8250		17-MAR-1989
DORJ68551917	DORE JOSEF	542	HN2	389874	8570		11-MAR-1989
BOWD47602613	BOMKER DIANA	542	HN2	391003	8250	103970	11-APR-1989
BOWD47602613	BOMKER DIANA	542	HN2	391177	8570	103970	14-APR-1989
CLEC33010717	CLERMONT CLAUDE	542	HN2	391561	8250		21-APR-1989
PARJ22062217	PAPE JEAN LOUIS	542	HN2	392620	8250		15-MAY-1989
RADR11620110	RADOUJIC RAISA	542	HN2	394058	8250		14-JUN-1989
GUILF16530316	GUIMOND FLORENCE	542	HN2	399032	8250		06-OCT-1989
GILW15610410	GILL WILMA	542	HN2	399403	8250		16-OCT-1989



The purpose of having those codes was to have a correlation between the clinical reason for the exam versus the result of the images, first with CT, then, from 1985 on, with both CT and MRI. For reasons of completeness, I have used the last 5 years to produce the present data about this correlation in Parkinson's, the result is somewhat surprising.

Out of 80 patients referred to Dr Sadikot for evaluation of possible DBS treatment for their Parkinson's, only 5 had Imaging evidence of arteriosclerotic leukoencephalopathy (6%). It seems that only a minority of patients referred for dementia have scans suggesting microvascular disease, whereas nearly 50% of patients referred for ataxia are reported to have arteriosclerotic leukoencephalopathy. More complete data will be reported in a following issue of Neuro Image.

STATISTICS 82  
Dementia

DATE	PATIENT N	MRN	REF#	DOC#	REASON	DIAGNOSIS
22638	290578	MASSICOTTE	F	68	N	14
22671	290669	MOREL	F	35	N	14
22746	290863	LEVESQUE	F	60	N	14
22785	291002	STEPHENS	F	66	N	14
22840	291113	SHAPIRO	F	74	N	14
22874	291167	BOURASSA	M	64	N	14
22876	291188	GASLOVITZ	M	69	N	14
22877	291189	DERGEL (retiré de liste)	F	13	N	14
22916	291273	ZERVOS	M	33	N	14
22918	291275	RONDOU	M	68	N	14
FEBRUARY 82						
22925	291288	HUDON	2	57	0	14
22975	291438	BRUGAL	1	74	0	14
23069	291626	MERCURE	1	68	0	14
23154	291812	THAUVETTE	1	68	0	14
MARCH 82						
23373	292299	BORDELEAU	2	69	0	14
23412	292425	LATENDRESSE	2	63	0	14
23493	292594	DUMAINE	2	69	0	14
23559	292730	VU	1	71	0	14
23561	292732	HOULE	2	70	0	14
23572	292744	CLAUSEN	1	68	0	14
23646	292900	GARNIER	1	64	0	14
23652	292909	STEINMETZ	1	73	0	14
23716	293037	BOLTON	1	75	0	14
23735	293075	CAMPEAU	1	47	0	14
APRIL 82						
23825	293249	OUELLETTE	2	53	0	14
23899	293432	FORGUES	2	72	0	14
23985	293619	O'REILLY LACHANCE	2	57	0	14
23986	293620	SENIOR	2	73	0	14
24006	293667	CHALIFOUR	2	59	0	14
24046	293754	GENDRON	2	53	0	14
24067	293795	HISTER	1	72	0	14
24069	293811	CLEMENT	1	66	0	14
24148	293968	SULLIVAN	2	63	0	14

Dementia01

PATIENT N	MRN	REF#	DOC#	EXAM I DA	REASON I	DIAGNOSIS
Aissani, Ahmed	1533674	Genge, Angela		2001-09-20 5420		HE20
Apostolos, Nikolaos	36128	Morris, David		2001-04-11 5420		—
Bertrand, Raymond	1530368	Gauthier, Serge		2001-03-12 5420		ha40
Bouthillette, Marcel	1531285	Genge, Angela		2001-05-02 5420		HL10
Boyer, Lucie	959538	Black, Deborah		5420		HA49
Caralla, Armando	589172	Wein, Howard		2001-09-04 5420		HN20
Carriero, Donato	1117026	Bacher, Yves		2001-04-11 5420		—
Cote, Pierre	1531152	Zifkin, Benjamin		2001-04-18 5420		HL10
Cyr, Carmelle	1530091	Aube, Michel		2001-03-13 5420		—
D'Abramo, Angela	558312	Hyde, Byron		2001-07-13 5420		HA33
D'Ambrosio, Louis		Libman, Israel		2001-01-17 5420		HN20
Da Silva, Jorge Elvino	1530511	Andrukaitis, Edouard		2001-03-13 5420		HI10
David, Guy	1533981	Lapierre, Yves		2001-10-11 5420		HN20
Descoteaux, Rachel	974897	Baril, Marie-Claire		2001-04-05 5420		HN20
Di Fruscia, Carmela	1533989	Durcan, Liam		2001-10-24 5420		HN20
Dubuc, Laureanne	1534190	Andrukaitis, Edouard		2001-10-01 5420		—
Dwornik, Catherine	1534382	Libman, Israel		2001-11-01 5420		HH40
Eguchi, Satoru	529588	Carsley, Holly		2001-07-16 5420		HN20
Farber, Eva	1531738	Libman, Israel		2001-05-22 5420		HN20

3 mars, 2003

STATISTICS 82  
Clinical reason  
Dementia

DATE	PATIENT N	MRN	REF#	DOC#	REASON	DIAGNOSIS
22638	290578	MASSICOTTE	F	68	N	14
22671	290669	MOREL	F	35	N	14
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22975	291438	BRUGAL	1	74	0	14
23069	291626	MERCURE	1	68	0	14
23154	291812	THAUVETTE	1	68	0	14
23202	291918	LANDRY	1	62	0	14
23276	292067	THORNTON	1	72	0	14
23295	292108	BELANGER	2	67	0	14
23315	292145	MALLETTE	2	39	0	14
MARCH 82						
23373	292299	BORDELEAU	2	69	0	14
23412	292425	LATENDRESSE	2	63	0	14
23493	292594	DUMAINE	2	69	0	14
23559	292730	VU	1	71	0	14
23561	292732	HOULE	2	70	0	14
23572	292744	CLAUSEN	1	68	0	14
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24006	293667	CHALIFOUR	2	59	0	14
24046	293754	GENDRON	2	53	0	14
24067	293795	HISTER	1	72	0	14
24069	293811	CLEMENT	1	66	0	14
24148	293968	SULLIVAN	2	63	0	14

Dementia01

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Cyr, Carmelle	1530091	Aube, Michel		2001-03-13 5420		—
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D'Ambrosio, Louis		Libman, Israel		2001-01-17 5420		HN20
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Dubuc, Laureanne	1534190	Andrukaitis, Edouard		2001-10-01 5420		—
Dwornik, Catherine	1534382	Libman, Israel		2001-11-01 5420		HH40
Eguchi, Satoru	529588	Carsley, Holly		2001-07-16 5420		HN20
Farber, Eva	1531738	Libman, Israel		2001-05-22 5420		HN20

3 mars, 2003