mg of acetylcholine chloride. Thermal and pharmacological sweat-rates were measured by a capacitance hygrometer on the forearm and leg.

Results: Generalized hyperhidrosis was seen in 8 patients with PD (4.7%). Hypo- or anhidrosis of various degree, mainly involving lower half of the body was seen in 122 PD patients (70.9 %) and irregularly scattered patchy sweating spots were noted during an early phase of the thermal sweat test. Compared with the control group, both of pharmacological and thermal sweat-rates were less abundant on the leg ($p<0.01$). Among the 3 groups of PD, the tremor dominant group showed less severe thermal sudomotor deficits than the other two groups ($p<0.01$).

Conclusion: The sudomotor function is frequently affected in PD, and its main level must be postganglionic. Measures to avoid a body temperature rise are important in PD, especially for patients with rigido-akinetic features.

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FREE PAPERS: AUTOMATIC NERVOUS SYSTEM DISORDERS AND MOVEMENT DISORDERS

Clinical features and electrocardiography parameters in Parkinson's disease

H. Mochizuki[a], A. Suzuki[a], Y. Ebihara[a], A. Taniguchi[a], N. Masamitsu[b], S. Kazutaka[a]. [a]*University of Miyazaki, Neurology, Miyazaki, Japan;* [b]*University of Miyazaki, Endocrinology- Metabolism- and Diabetes, Miyazaki, Japan*

Background: Cardiac ^{123}I-metaiodobenzylguanidine scintigraphy (MIBG) previously demonstrated an uptake reduction in patients with Parkinson's disease (PD). Recently, prolongation of PR interval of electrocardiography (ECG) was reported to reflect the abnormalities of MIBG findings in PD. On the other hand, increased body mass index (BMI) associated with autonomic dysfunction using MIBG method in PD.

Objective: In this study, we investigated the relation between clinical features including BMI and ECG parameters in patients with PD.

Patients and Methods / Material and Methods: One hundred and fifty-six patients with PD who were naïve to anti-parkinsonian drugs were enrolled in this study. Their clinical features (age, disease duration, Hoehn-Yahr scale, and BMI) and ECG parameters (RR, PR, QRS, QT, and heart-rate corrected QT (QTc)) were analyzed.

Results: BMI was positively correlated with PR and QRS intervals in patients with PD, regardless of disease duration and severity. QT and QTc was positively correlated with age.

Conclusion: In large-scale normal study, the PR and QRS prolongations were reported in obese people. Our results indicated that this fact was also kept in PD patients. Autonomic dysfunction, BMI increase and prolonged PR and QRS intervals were closely associated with each other in PD. The prolongation of QTc interval increased the risk of sudden cardiac death. In the medical treatments of the elderly PD patients, it is necessary to pay attention to QTc.

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FREE PAPERS: DEMENTIA 3

Preventive effect of rifampicin on Alzheimer's disease needs at least 450 mg daily for one year: An FDG-Pet Follow-Up Study

T. Iizuka[a], M. Kameyama[b]. [a]*Fukujuji Hospital, Center for dementia, Kiyose, Japan;* [b]*Keio University, Nuclear medicine, Shinjuku-ku, Japan*

Background: Rifampicin was reported to inhibit amyloid-β oligomerization and tau hyperphosphorylation in mouse models and could serve as a promising available medicine for the prevention of Alzheimer's disease (AD).

Objective: To examine whether rifampicin has such preventive effects in human, we retrospectively reviewed ^{18}F-FDG-PET findings of elderly patients with mycobacterium infection treated with rifampicin.

Patients and Methods / Material and Methods: Forty non-demented elderly patients treated with rifampicin for mycobacterium infections who showed AD-type hypometabolism were enrolled. The hypometabolic patterns were evaluated with stereotaxic statistical analysis and region of interest analysis.

Results: Before treatment, AD-type hypometabolism was observed in twelve patients. The FDG-uptake in posterior cingulate cortex (PCC) was improved or stabilized in 6 patients after 12-month therapy (450mg/day), whereas another 6 patients with 6-month therapy showed decrease of FDG-uptake in PCC. In patients who underwent FDG-PET only after treatment, metabolic decline in PCC and cognitive decline were significantly milder in patients with ≥ 12 months of rifampicin treatment than those with 6 months. Multiple regression analysis revealed that dose of rifampicin and treatment duration significantly influenced FDG uptake in PCC.

Conclusion: The preventive effect of rifampicin depended on the dose and the treatment duration and that the effect needs at least 450mg daily for one year.

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FREE PAPERS: DEMENTIA 3

Virtual spatial navigation correlates with the moca score in amnestic mild cognitive impairment patients

N. Rogers[a,b], C. SanMartin[a], D. Ponce[c], M. Henríquez[d], J.L. Valdés[b], M.I. Behrens[b,c,e]. [a]*Departamento de Neurología y Neurocirugía, Universidad de Chile, Santiago, Chile;* [b]*Departamento de Neurociencias, Universidad de Chile, Santiago, Chile;* [c]*Centro de Investigación Clínica Avanzada CICA, Universidad de Chile, Santiago, Chile;* [d]*Instituto de Ciencias Biomédicas, Universidad de Chile, Santiago, Chile;* [e]*Departamento de Neurología y Psiquiatría, Clínica Alemana, Santiago, Chile*

Background: The hippocampus is the area of the brain where the highest proportion of neurodegeneration occurs in Alzheimer's disease (AD). Its neural circuits are involved in spatial learning and memory, including spatial navigation. Poor hippocampus-dependant navigation manifested by impairment in virtual spatial navigation tests, such as the virtual Morris water maze, may precede other clinical findings in amnestic mild cognitive impairment (aMCI) patients, well regarded as a pre-dementia stage of AD.

Objective: Our aim was to determine if spatial navigation impairment in aMCI patients correlates with clinical findings in tools such as the Montreal Clinical Assessment (MoCA).

Patients and Methods / Material and Methods: We recruited 24 patients –15 healthy controls and 9 aMCI patients– staged with the CDR-SOB and the MoCA test. Spatial navigation was tested through a three-staged version of Virtual Morris Water Maze (vMWM) of increasing complexity.

Results: No significant epidemiological differences were found between groups (age, sex, comorbidities, educational level). Significant differences ($p<0,05$) in total path length, success rate and latency-to-target time were observed between groups. A negative correlation between MoCA score and total path length, and success

rate, was observed in the aMCI group; a positive correlation was observed in the same group between MoCA score and latency target time.

Conclusion: These results show that aMCI patients had worst performance in the vMWM that correlated with lower MoCA scores. This suggests that virtual cognitive non-invasive testing may complement other clinical findings in early detection of pre-AD patients, offering a therapeutic window for intervention.

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FREE PAPERS: DEMENTIA 3

Risk of bone fracture in patients with Alzheimer's disease: A pooled analysis of 144447 participant data

M. Shehata[a], A. Ramadan[b], M. Ebada[a], A. Negida[a], M. Abdel-Daim[c]. *[a]Zagazig University, Faculty of Medicine, Zagazig, Egypt; [b]Mansoura University, Faculty of Medicine, Mansoura, Egypt; [c]Suez Canal University, Department of Pharmacology, Ismailia, Egypt*

Background: Alzheimer's disease (AD) is the most common neurodegenerative disorder. Recent reports suggest that AD patients might be at higher risk of bone fracture.

Objective: The aim of this systematic review and meta-analysis is to compare the levels of bone minerals density (BMD) and fracture risk between AD patients and healthy controls.

Patients and Methods / Material and Methods: We searched PubMed, EMBASE, Scopus, and Cochrane Library (till March 2017) for observational studies comparing AD patients and healthy control in terms of BMD and fracture risk. BMD and fracture risk were presented as standardized mean difference (SMD) and risk ratio (RR) and pooled with the corresponding 95% confidence intervals (CIs) in the random effects model meta-analysis.

Results: Seventeen observational studies, including 62405 participants in the AD group and 82042 participants in the control group, were included in the final analysis. Compared to healthy controls, AD patients had significantly less BMD (SMD -1.18, 95% CI]-1.67 to -0.70[) and significantly more fractures (RR = 1.82, 95% CI]1.47 to 2.27[).

Conclusion: This meta-analysis provides evidence that patients with AD have less BMD and elevated risk of bone fractures. The assessment and management of bone health should be incorporated in the management of Alzheimer's disease patients.

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FREE PAPERS: DEMENTIA 3

Rapidly progressive dementia: An eight year (2008-2016) retrospective study

A. Patil[a], V. Vishnu[a], D. Naheed[a], V. Pulikottil[a], A. Pandit[b], M. Goyal[a], M. Modi[a], V. Lal[a]. *[a]Post Graduate Institute of Medical Education and Research, Neurology, Chandigarh, India; [b]AIIMS, Neurology, New Delhi, India*

Background: Rapidly progressive dementias include a myriad of conditions functionally disabling an individual within span of few days to months.These are therefore recognized earlier and provide an opportunity to intervene.

Objective: This study investigated the profile of patients with rapidly progressive dementia at first presentation.

Patients and Methods / Material and Methods: Retrospective case analysis was done in 187 patients with rapidly progressive dementia who presented to the Postgraduate Institute of Medical Education and Research, Chandigarh, India from January 2008 to August 2016. Patients were divided into three groups: (1) Reversible (treatable) secondary dementia group, (2) Irreversible secondary dementia group (SSPE and sCJD), (3) Non-prion Neurodegenerative dementias (primary neurodegenerative and vascular dementia). Cases presenting with delirium secondary to metabolic, drug induced or septic causes and those with signs of meningitis were excluded.

Results: Secondary reversible causes formed the most common cause for RPD with immune mediated encephalitides, neoplastic and infectious disorders as the leading causes. The patients in this series had an younger onset of RPD. Infections presenting with RPD accounted for the most common cause in our series (39%) with SSPE (41%) as the leading cause followed by neurosyphilis (17.9%) and PMLE (15.3%). Immune mediated dementias formed the second most common (18.1%) etiologic cause for RPD. The neurodegenerative dementias were third common cause for RPD in our series. Neoplastic disorders and immune mediated presented early (< 6 months) while neurodegenerative disorders presented later (> 6 months).

Table 1: Clinical and demographic profile of patients as per the etiologic subgroups

Sr. no.	Etiological subgroup	No (n)	Mean age±SD years	Median age (IQR) years	Males (%)	duration in months Mean ± SD (median)	Average MMSE score
1	Nutritional and metabolic disorders	7	42.14±15.1	50 (25-54)	5(83.3%)	6.3±4.8(8)	18.25
2	Immune mediated encephalitis/encephalopathy	34	54.5±16.9	55 (45,69.2)	16(50%)	3.9±3.8 (2)	18.6
3	Neoplastic or metastatic disorders	25	56.17±14.1	58 (47.5-60.5)	15(65.2%)	3.04±2.6 (1)	18.8
4	Vascular cognitive imparment	18	62.3±13.7	59 (50.7-78)	13(81.2%)	6.7±3.4(6)	11.4
5	Infectious disorders	39	32.4±16.8	25(20-42)	26(81.2%)	5.9±3.9(4)	19.1
6	Neurodegenerative disorders	27	56.2±13.3	58(43.5-65.5)	21(84%)	9.2±3.9(12)	18.6
7	Pseudodementia:	5	56.8±13.1	64(42.5-67.5)	1(20%)	5±4.3(4)	28.2
8	Prion diseases	14	57.7±9.6	58(47.7-67)	7(50%)	3.8±3.3(3)	20.5
9	PACNS:	10	35±9.9	35.5(30.5-41)	8(80%)	5.9±4.4(5.5)	22.3
10	Demyelinating disorders:	6	38.5±17.7	39.5(21-51.5)	3(50%)	3.33±3.5(2.25)	24.6
11	Mixed / undetermined dementia	2	53.3±20.9	53	6(60%)	5.2±4.02(4.5)	22

SD: standard deviation, IQR: inter quartile range, MMSE: mini mental status examination, PACNS: primary CNS vasculitis

Table 2: Infectious causes presenting with Rapidly progressive dementia:

Sr. no	Diagnosis:	No. of patients:	Investigations:
1	HSV encephalitis	1	CSF HSV PCR: positive
2	Tubercular meningitis	2	CSF: normal; communicating HCP with ring enhancing granulomas in parietal lobe.
3	Cryptococcal meningitis	1	Cryptococcal antigen titre-1:64
4	TBM+ Cryptococcal meningitis	1	CSF proteins: 110, sugar: 10, ADA: 16, cryptococcal culture +; BAL: AFB2+
5	Neurocysticercosis	3	Not done: 2; Normal: 1
6	SSPE	17	Raised CSF anti-measles antibody titre: 9; normal titre: 1; not done: 6
7	HIV dementia	1	CSF: not done
8	HIV + PMLE	6	Mean CD4 count: 95;
9	Neurosyphilis	7	CSF VDRL: positive in 5, st. VDRL: positive in all

CSF: cerebrospinal fluid, HSV: herpes simplex virus, PCR: polymerase chain reaction, TBM: tubercular meningitis, HCP: hydrocephalus, ADA: adenosine deaminase, BAL: bronchoalveolar lavage, AFB: acid fast bacilli, SSPE: subacute sclerosing panencephalitis, VDRL: venereal disease research laboratory.