28/11/2023 PROVA NON ESTRATTA Sabrina Marucci

29_CONCORSO PUBBLICO, PER TITOLI ED ESAMI, PER LA COPERTURA A TEMPO DETERMINATO, DELLA DURATA DI CINQUE ANNI PER N. 1 POSTO DI RICERCATORE SANITARIO, CAT. D, LIVELLO D SUPER DA ASSEGNARE ALLA SC NEUROLOGIA I – MALATTIA DI PARKINSON E DISTURBI DEL MOVIMENTO

PROVA I

1) Elencare e descrivere brevemente le differenti tecniche di laboratorio per lo studio delle sinucleinopatie

2) In Access cosa è una "Query"?

a. uno strumento idoneo all'interrogazione ed alla manipolazione dei dati
b. una tabella di visualizzazione di attributi di un elemento geografico
c. una tabella di visualizzazione di attributi di un elemento grafico

3) Leggere e tradurre:

The presence of protein aggregates is a hallmark of many neurodegenerative diseases, including Parkinson's disease (PD), Alzheimer's disease (AD), and frontotemporal lobar degeneration (FTLD). Traditionally, each disease has been associated with the aggregation of specific proteins, which serve as disease-specific biomarkers. For example, aggregates of α-synuclein (α-syn) are found in α-synucleinopathies such as PD, dementia with Lewy bodies (DLB), and multiple system atrophy (MSA). Similarly, AD is characterized by aggregates of amyloid-beta (Aβ) and tau proteins. However, it has been observed that these protein aggregates can also occur in other neurodegenerative diseases, contributing to disease progression. For instance, α-syn aggregates have been detected in AD, Down syndrome, Huntington's disease, prion diseases, and various forms of FTLD. Similarly, Aβ aggregates have been found in conditions like DLB and PD. Tau aggregates, in addition to being present in primary tauopathies, have been identified in prion diseases, α-synucleinopathies, and cognitively healthy aged subjects. Finally, aggregates of TDP-43, typically associated with FTLD and amyotrophic lateral sclerosis (ALS), have been observed in AD, progressive supranuclear palsy (PSP), corticobasal degeneration (CBD), MSA, DLB, and other neurodegenerative diseases. These findings highlight the complexity of protein aggregation in neurodegeneration and suggest potential interactions and common mechanisms underlying different diseases. A deeper understating of this complex scenario may eventually lead to the identification of a better elucidation of the pathogenetic mechanisms of these devastating conditions and hopefully new therapeutic stragegies.

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PROVA 2

1) Il ruolo della skin biopsy nello studio delle sinucleinopatie

2) In Excel cosa è una "funzione"?

a. un algoritmo di calcolo precostituito che ci permette di elaborare un calcolo complesso sui dati contenuti nelle celle
b. un comando che ci permette di stampare
c. un comando che ci permette di creare un grafico

3) Leggere e tradurre:

Multiple system atrophy (MSA) is characterized by accumulation of phosphorylated α-synuclein (p-syn) as glial cytoplasmic inclusions in the brain and a specific biomarker for this disorder is urgently needed. We aimed at investigating if p-syn can also be detected in skin Remak non-myelinating Schwann cells (RSCs) as Schwann cell cytoplasmic inclusions (SCCi) and may represent a reliable clinical biomarker for MSA. This cross-sectional diagnostic study evaluated skin p-syn in 96 patients: 46 with probable MSA (29 with parkinsonism type MSA and 17 with cerebellar type MSA), 34 with Parkinson's disease (PD) and 16 with dementia with Lewy bodies (DLB). We also included 50 healthy control subjects. Patients were recruited from five different medical centres. P-syn aggregates in skin sections were stained by immunofluorescence, followed by analyses with confocal microscopy and immuno-electron microscopy. All analyses were performed in a blinded fashion. Overall, p-syn aggregates were found in 78% of MSA patients and 100% of patients with PD/DLB, whereas they could not be detected in controls. As for neuronal aggregates 78% of MSA patients were positive for p-syn in somatic neurons, whereas all PD/DLB patients were positive in autonomic neurons. When analysing the presence of p-syn in RSCs, 74% of MSA patients were positive, whereas no such SCCi could be observed in PD/DLB patients. Analyses by immuno-electron microscopy confirmed that SCCi were only found in cases with MSA and thus absent in those with PD/DLB. In conclusion, our findings demonstrate that (i) fibrillar p-syn in RSCs is a pathological hallmark of MSA and may be used as a specific and sensitive disease biomarker; (ii) in Lewy body synucleinopathies (PD/DLB) only neurons contain p-syn deposits; and (iii) the cell-specific deposition of p-syn in the skin thus mirrors that of the brain in many aspects and suggests that non-myelinated glial cells are also involved in the MSA pathogenesis.

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PROVA 3

1) I biomarcatori utilizzati per la diagnosi differenziale di PD (Parkinson Disease) e parkinsonismo

2) Il Plug & Play è una tecnologia che permette di:

a. utilizzare una periferica semplicemente collegandola al computer
b. attivare il risparmio energetico del computer
c. aumentare il numero di dispositivi collegabili al computer

3) Leggere e tradurre:

Background: The differential diagnosis between multiple system atrophy parkinsonism type (MSA-P) and Parkinson's disease with orthostatic hypotension (PD+OH) is difficult because the 2 diseases have a similar clinical picture. The aim of this study is to distinguish MSA-P from PD+OH by immunostaining for abnormal phosphorylated α-synuclein at serine 129 (p-syn) in cutaneous nerves.

Method: We recruited 50 patients with parkinsonism and chronic orthostatic hypotension: 25 patients fulfilled the diagnostic criteria for MSA-P and 25 patients for PD+OH. The patients underwent a skin biopsy from the cervical area, thigh, and leg to analyze somatic and autonomic skin innervation and p-syn in skin nerves.

Results: Intraneural p-syn positivity was found in 72% of patients with MSA-P, mainly in distal skin sites. More important, p-syn deposits in MSA-P differed from PD+OH because they were mainly found in somatic fibers of subepidermal plexi, whereas scant autonomic fiber involvement was found in only 3 patients. All patients with PD+OH displayed widely distributed p-syn deposits in the autonomic skin fibers of proximal and distal skin sites, whereas somatic fibers were affected only slightly in 4 patients with PD+OH. Skin innervation mirrored p-syn deposits because somatic innervation was mainly reduced in MSA-P. Sympathetic innervation was damaged in PD+OH but fairly preserved in MSA-P.

Conclusions: The p-syn in cutaneous nerves allows the differentiation of MSA-P from PD+OH; MSA-P mainly shows somatic fiber involvement with relatively preserved autonomic innervation; and by contrast, PD+OH displays prevalent abnormal p-syn deposits and denervation in autonomic postganglionic nerves.