

# Identical twins... Are they identical?

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## [1] Background

Reports of monozygotic HD twins are rare (Panas et al, 2008) and phenotypic concordance reported as the rule (Sudarsky et al, 1983). Reports are of twins with the same number of trinucleotide repeats, with different clinical behavioural but not significant motor differences (Gómed-Esteban et al, 2007). Such phenotypic discordance was reported as very rare (Friedman et al, 2005) and thus be used to explore environmental factors (Ketelaar, Hofstra and Hayden, 2012).

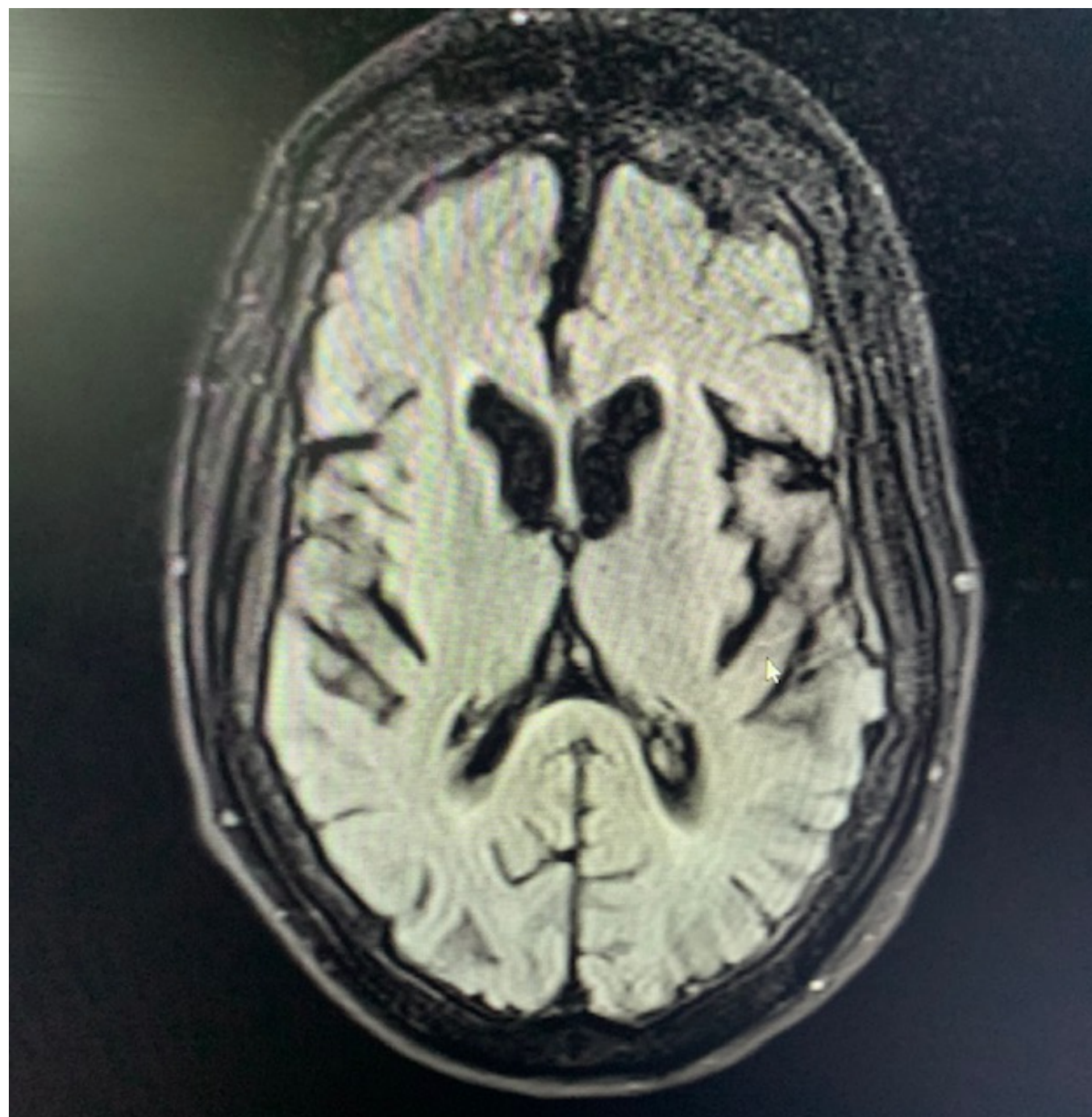
## [2] Case Histories

Two female monozygotic twins with HD were born 6 weeks premature and raised in the same environment. Voluntary predictive testing for HD was done when both were aged 21 years (Heimler and Zanko, 1995). Their father died in 2018 from HD and the twins are the only children from this partnership.

We will be reporting on motor, neuropsychological and psychiatric manifestations along with MRI findings. Twin 2 required admission in 2015 while Twin 1 required admission in 2020.

## [3] Twin 1 (first born):

Twin 1 is right handed and originally presented to Liaison Psychiatry with an Eating disorder and low mood since the age of 23 years. She had reported depressed mood after her diagnosis of HD. She also had a history of 2 significant suicide attempts. She was transferred after the last attempt. She also experienced auditory hallucinations that were commentary in type and memory difficulties. Medical history included asthma, hypertension and a history of pneumonia three times. She also had dysphagia and was being followed by Speech and Language: a soft diet was recommended. BMI is 24.14, Glu 5.5, Hg A1C 35, T Chol 5.4. She wears glasses but does not have hearing or dental problems. Since admission she has tended to self isolate, she has poor self care and declines to engage in any formal Neuropsychological or Physiotherapy assessments.



Twin 1 MRI

On examination she has slurred dysarthric speech, truncal and lower limb chorea, cognitive impairment and a history of falls. Occupational Therapy assessment reported exploratory activity levels using the Pool Activity (PAL) check list.

Medications: Desogestol, amlodipine, Symbicort inhaler, Seretide inhaler, Vit D, Lansoprazole, olanzapine, Trazadone, Sertraline, Abilify and Nutricreme and Fortisip supplements.

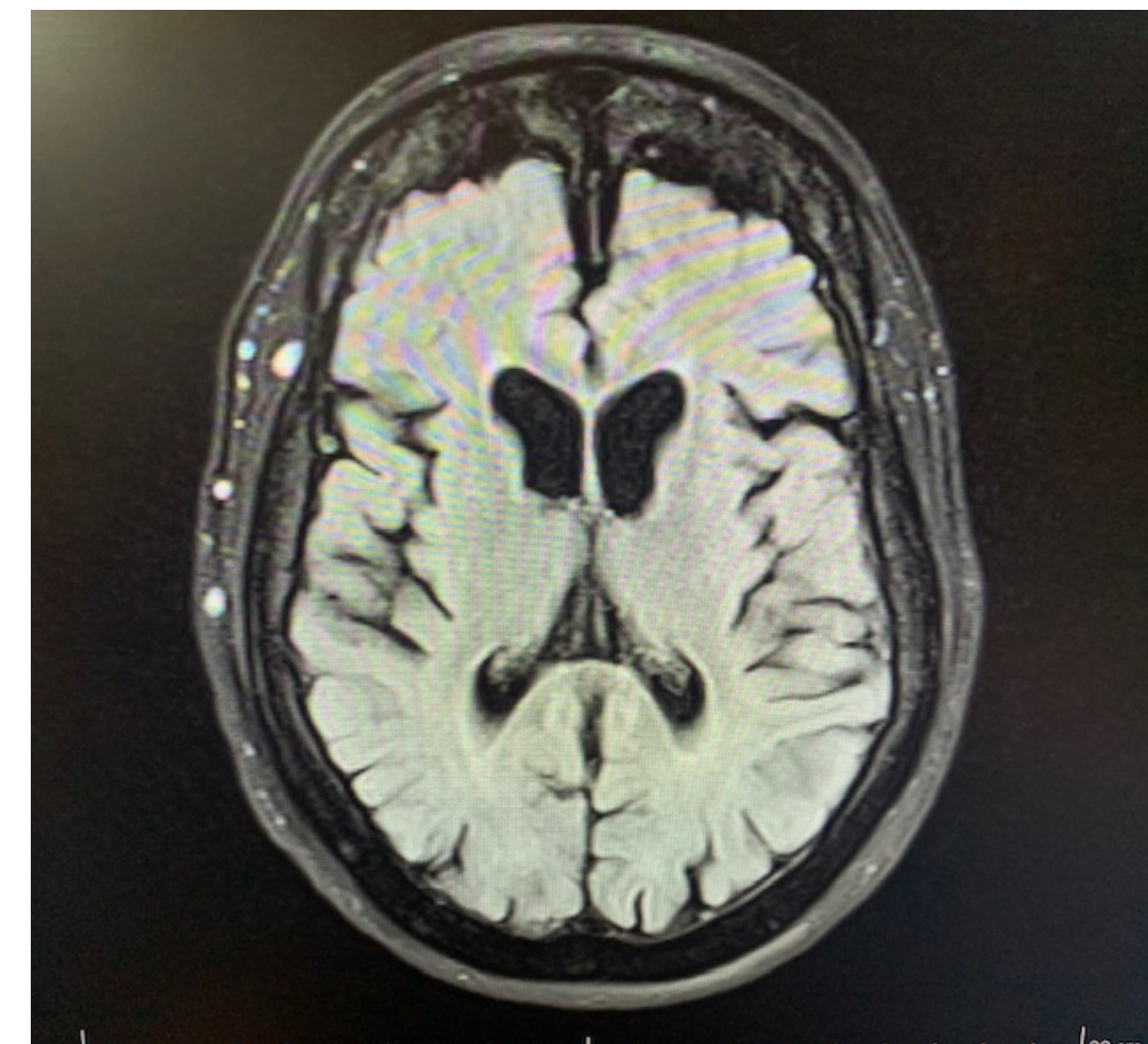
MRI Brain Twin 1 Report 19/03/2021: There is parenchymal atrophy, most marked in the frontal and temporal lobes with prominence of sulci and ventricles. Signal return from grey-white matter is normal. There was no acute area of infarction on diffusion weighted imaging.

## [4] Twin 2:

Twin 2 presented with aggressive behaviours at home and required acute hospitalization after threatening her mother.

During her hospitalization she has assaulted her mother, sister and peers several times.

Twin 2 is right handed and was diagnosed with a heart murmur aged 4 years and had corrective surgery aged 10 years. She had a history of migraine. She had presented at 18 years with low mood and history of OCD symptoms. Multiple episodes of self-harm and becoming more aggressive and violent. Irritability, impulsivity, and aggressive behavior has continued with word funding difficulties. OT assessment confirmed her high falls risk and recommended exploratory level of activities with the use of a rollator, helmet (provided by physiotherapist) and a personal falls alarm (an iVi Intelligent Tunstall Pendant). Choking episode when eating lettuce.



Twin 2 MRI

Mindfulness group and health eating groups were intermittently attended.

Neuropsychological reported significant impairments in processing speed, attention, learning and memory, visuospatial processing, executive functioning and language. Impairments in memory and learning appeared to be attributable to difficulties with attention, processing speed and executive function, consistent with HD. She had Covid in April 2020 and recovered. She had impaired hearing on testing. Her weight is 73.9 kgs and BMI of 29.6, MUST Score 1, Speech and language had recommended level 4 pureed diet and thin fluids. Glucose was elevated at 5.5, Hg A1C 38, Prolactin 1240. Wearing glasses and a soft helmet. Waterlow score 5, Barthel 15 on 2/3/21, Berg Balance was 30/56 (had been 51/56 in 3/2017) and her falls risk using the FRAT was 19/20.

Medications: Desogestrel, Vit D, Dymista, Clonazepam, sertraline, mirtazepine, folic acid, olanzapine, quetiapine and zopiclone.

MRI Brain Twin 2 Report 22/03/2021: Generalized and bifrontal cerebral atrophy appears to be present. No acute area of infarction on diffusion weighted imaging.

## [5] Conclusion

Both monozygotic twins were raised in the same home environment and were only significantly separated by hospitalizations but did visit each other. They are now being cared for on the same unit. They have significant differences in their medical and psychiatric histories and in their presentations and behaviours. Twin 2 had been labelled with an Emotionally Unstable Personality disorder. Twin 1 had lost 13 kgs since her original admission and had an eating disorder. By understanding phenotypically discordant monozygotic twins we may be able to identify factors influencing the phenotypic expression of Huntington's disease.

## [6] References

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