Correspondence

Does hyperostosis frontalis interna have any clinical relevance in stroke patients?

Sir,

Hyperostosis frontalis interna (HFI) is a condition characterized by overgrowth of the bone of inner mantle of the skull. It was first described by Morgagni nearly three centuries ago and although common has been rarely referenced in the medical literature. It is now considered an independent condition that is benign and incidental, although in other reports it has been associated with metabolic disorders.

In the era of hyper-acute stroke care, brain imaging is often the first test available on patients so all information that can be derived may be useful in assessment. The imaging involves the use of contrast material to assess brain vasculature. There is a risk of contrast nephropathy in those with renal dysfunction. Thus, we aimed to assess the relationship between diabetes mellitus and renal dysfunction, and HFI.

We retrospectively reviewed acute imaging and biochemistry profiles on all consecutive subjects admitted to the stroke service of a University Hospital over a 6-month period. Details of patients’ age and markers of metabolic function (estimated glomerular filtration rate (eGFR) and haemoglobin A1C (HBA1C)) were recorded. Bone windows computerized tomograph (CT) scans were reviewed by a clinician blinded to metabolic results and presence of HFI identified. eGFR was calculated using Cockcroft–Gault equation.

HFI types were classified via the CT volume rendering method into: no HFI, minor HFI (equivalent to Hershkovitz et al., 1999’s type B) and advanced/major HFI (equivalent to Hershkovitz et al., 1999’s types C and D).

There were 144 subjects (75 males) during the study period. The mean age for males was 69.9 and females 70.1 years. HFI was found in 2 (2.7%) males and 29 (42.0%) females. In females, HFI was characterized as minor in 19 and advanced in 10. HBA1C was not significantly higher in subjects with HFI (41.2 vs. 41.7 mmol/mol, P=0.81). Subjects with HFI were older (71.6 vs. 67.1 years, P=0.04).

Mean eGFR was lower in subjects with HFI (66.6 vs. 79.7 mls/min P=0.002) (Fig. 1). Twenty-four of 29 females with HFI had Grade 2 or greater renal dysfunction compared with 22 of the

Figure 1. Association of HFI and eGFR in females. e GFR, estimated glomerular filtration rate; HFI, hyperostosis frontalis interna.
40 subjects without HFI \( (P = 0.02 \text{ chi square, OR } 3.9 \ (1.9–12.3)) \).

HFI has been reported in 5–12% of the general population, with preponderance towards females. The incidence has been estimated to be between 40 and over 60% in post-menopausal women.\(^3\)

In our study, relationship between being female, age and HFI are consistent with reported literature. HBA1C was used as a surrogate for hyperglycaemia and was not significantly higher, comparable to study by Smith and Hemphill\(^4\) but contrary to other reports.\(^5\) This could be due to the higher number of obese participants in other studies.

There is paucity in literature on the association of HFI and chronic kidney diseases. In our study, the odds of females with HFI having Grade 2 or greater renal dysfunction was high at 3.9. Our findings highlight a need for continued efforts in researching the association of HFI and renal dysfunction and other metabolic disorders.

**Conflict of interest:** None declared.

O. Ntlholang and O. Mahon
*Department of Medicine for the Elderly (Stroke Service), St James Hospital, Dublin, Ireland*
damaze2002@yahoo.com

D. Bradley
*Department of Neurology, St James Hospital, Dublin, Ireland*

J.A. Harbison
*Department of Medicine for the Elderly (Stroke Service), St James Hospital, Dublin, Ireland*
*Department of Medical Gerontology, Trinity College, Dublin, Ireland*

**References**


doi:10.1093/qjmed/hcu137

Advance Access Publication 28 June 2014