PARIETAL FORAMINA – HSS Service
OMIM 168500, 609597

INTRODUCTION
Enlarged parietal foramina has a prevalence of between 1/15,000 and 1/50,000 and is characterised by symmetrical, paired radiolucencies of the parietal bones, close to the intersection of the sagittal and lambdoid sutures. Although usually asymptomatic, a minority of individuals may have headaches, vomiting, or intense local pain – especially on application of mild pressure to the unprotected cerebral cortex. In young children the disorder may present as a persistently large posterior fontanelle caused by a single large central parietal bone defect (cranium bifidum). This tends to resolve into distinct enlarged parietal foramina over the first few years of life. Occasionally other clinical features, such as aplasia cutis congenita or clavicular hypoplasia, may be seen. Enlarged parietal foramina may present as an unexpected finding on prenatal ultrasound scan.

A clinical diagnosis is usually made following a postero-anterior skull radiograph. Confirmation by molecular analysis enables parietal foramina to be distinguished from other causes of defective skull ossification, and from syndromic associations such as proximal 11p deletion syndrome, Saethre-Chotzen syndrome and cleidocranial dysplasia. Careful ultrasound examination at 18-20 weeks will usually detect enlarged parietal foramina in a fetus at 50% risk. Prenatal molecular testing is rarely requested because of the usually benign prognosis.

The service is funded by the National Commissioning Group for Highly Specialised Services (HSS) for referrals from England, Scotland, Wales and Northern Ireland.

TESTING AND REFERRALS
All diagnostic samples should be accompanied by a completed clinical questionnaire & consent form (click here)
The aim is to provide a joint Molecular and Clinical service, and Professor Andrew Wilkie (+44 (0)1865 222619) is available for advice. We test:
- Clinically affected patients
- Relatives of clinically affected patients in whom a mutation has been identified
- Prenatal testing is available in cases where a mutation has been identified. These must be discussed with the laboratory and arranged in advance.

REFERRALS
- From Clinical Genetics, Paediatrics, Craniofacial clinics and Dysmorphologists.
- Prenatal testing is only accepted from Clinical Genetics and / or Prenatal Diagnosis.

STRATEGY & TECHNICAL INFORMATION
- Mutation screening in new diagnostic cases is undertaken by:
  - Fluorescent sequencing of ALX4 exons 1-4 and of MSX2 exons 1-2. About 90% are due to mutations of either MSX2 or ALX4 (approximately equal numbers of cases per gene).
  - Dosage analysis by MLPA across all exons of the craniofacial genes TWIST1, ALX1, ALX4, MSX2, RUNX2 and EFNB1 and 3 exons of ALX4. Parietal foramina have been reported in association with deletions of the ALX4 and MSX2 genes, complete gene deletions can also occur.
  - Family tests: When a mutation has been identified in a family the individual is tested only for the familial mutation.

TARGET REPORTING TIMES: Supraregionally funded by HSS for referrals from the UK
Diagnostic test (Sequencing & MLPA): 8 weeks
Familial Mutation test: 10 days
Prenatal testing (includes maternal contamination check): 3 days

N.B. Details are correct for the date of printing only – last updated 11/06/2015