Quality Improvement and Patient Safety

TRENDS AND TECHNIQUES IN INFANT LUMBAR PUNCTURE – TOWARDS A MORE STANDARDISED APPROACH TO MAXIMISE PROCEDURE SUCCESS

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Background Lumbar puncture (LP) is commonly performed as part of a septic screen in infants under 3 months of age. The success rate is highly variable, between 50–70%, and many infants require multiple attempts.1 Haemorrhagic cerebrospinal fluid (CSF) is often the result of incidental trauma during LP and causes uncertainty when interpreting results. This may lead to delayed or missed diagnosis, unnecessary antibiotic therapy and prolonged admission. The procedure is uncomfortable for infants, and therefore ensuring successful CSF sampling is important.

Objectives To measure the local success rate of LP procedures in young infants, and investigate factors associated with failure. We also aimed to evaluate current preferences and techniques amongst paediatricians to identify areas to improve procedural success.

Methods The study was conducted in a large tertiary children’s hospital. Outcomes for infants younger than 3 months undergoing LP were retrospectively analysed over a period of 2 months. All procedures were performed on a general paediatric ward or admissions unit. Outcomes measured included LP success at first attempt, rate of traumatic LP (>1000 x10⁶ red cells/L or clotted), and number of failed attempts (dry tap).

A survey was then created to assess local practice. All general paediatric medical staff who had performed at least one LP were invited to participate in the survey. Questions were designed to investigate the preferences, techniques, training and experience of clinicians, and were targeted to local guidelines.

Results Over the study period, 21 LPs were performed in infants under 3 months of age. CSF was obtained on the first attempt in 23% of procedures, and on the second attempt in 54%. The CSF obtained was haemorrhagic in 50% of samples. In total out of all documented procedures, there were 14 (52%) unsuccessful attempts, 6 (22%) traumatic samples and 7 (26%) successful samples obtained.

The anonymous survey received 22 responses from general paediatric staff. The majority of respondents were senior trainees ST4–8 (41%), 7 were consultants and 6 were junior trainees. Most (77%) reported performing more than 10 LPs, and 23% had performed over 100 procedures. Despite this, only 18% had ever received formal LP training. Preferred technique varied between people: 91% opt for lateral flexed positioning, 27% use an early stylet removal method, and others described their variations of LP technique. Analgesia was received routinely by only 82% of clinicians, and choice of analgesia varied widely with two thirds choosing sucrose. 95% of respondents thought the single most important factor in procedure success is good holding technique from the assistant.

Conclusions The majority of young infants undergoing a lumbar puncture require multiple attempts. The use of sucrose for analgesia is sporadic and 1 in 5 clinicians do not routinely offer any analgesia. Formal training for paediatric trainees and assisting ward staff may offer avenues to improve the success of infant lumbar punctures.

REFERENCE

Paediatricians with Expertise in Cardiology Special Interest Group

OPTIMISING RESOURCES IN A SAFE AND EFFECTIVE NEONATAL MURMUR PATHWAY TO IMPROVE PATIENT CARE

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Background Neonatal heart murmurs are commonly heard during routine newborn examination. In our institution, babies found to have a murmur on the postnatal ward are reviewed in a registrar-led murmur clinic, ideally within 10 days. If the murmur persists, they are referred for review in an echocardiography clinic led by a Neonatologist with Expertise in Cardiology. We have recently introduced a paediatric echo technician to the pathway who is available to perform two echocardiograms each week.

Objectives We sought to assess the safety and efficacy of our neonatal murmur pathway. In addition, we evaluated whether the availability of the echo technician has reduced the echo waiting time.

Methods Data including referral dates, clinic dates and outcomes were collected retrospectively from the electronic patient records of all babies seen in both murmur and echo clinic from September 2019 to August 2020.

Results 265 babies were referred to the registrar-led murmur clinic. The median waiting time from referral to murmur clinic appointment was 13 days (IQR 9–17). The majority (68.8%) no longer had a murmur and were discharged from murmur clinic, 72 babies (27.1%) were referred to either the echo technician (29, 10.9%) or consultant echo clinic (43, 16.2%). Four babies (1.5%) were referred directly to cardiology from murmur clinic with concerning clinical findings. The median waiting time from murmur clinic to an echo was 43 days (IQR 19–93) overall; however amongst those who were seen by an echo technician the waiting time was 19 days (IQR 16.5–36). The overall waiting time has reduced from 48 days in a previous evaluation performed between April and December 2016.

Of the 72 babies referred for an echo 44% were found to have pathology. 14 babies (19%) had an atrial sepal defect, ventricular septal defect, patent ductus arteriosus or combinations of these. Two patients had pulmonary stenosis, one a bicuspid aortic valve and aortic stenosis and one had turbulent flow in the left pulmonary artery and aorta. The remainder had an isolated finding of a patent foramen ovale.

No babies re-presented with signs or symptoms of congenital heart disease between discharge from postnatal ward and...