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PAEDIATRICS

Paediatrics: How anaesthesia in children varies from adults

1) Compare the differences and similarities in peri-operative management in paediatric and adult patients in a tertiary referral centre in the UK to Australia

There is great demand for anaesthesia in paediatrics. At the RCH, between 17,500 and 18,000 service administrations were recorded per annum. This is because anaesthesia is needed not only for surgery, but is used for more routine procedures. An adult is better able to tolerate an MRI for example, but it is more reasonable to use anaesthesia in a child because of positioning, having to lie still, the stress of the procedure and the benefit of amnesia after the event.

Paediatric patients are referred to surgical teams in much then same way as adult patients. Pathology may be picked up by the family doctor/ G.P., or early on in life as part of a congenital problem. For example, a child with prolonged post-natal jaundice subsequently found to have a conjugated hyperbilirubinaemia may necessitate involving the colorectal or paediatric surgery team early on, whilst the child is still in hospital.

Similarly to adults, a multi-disciplinary approach is taken pre-operatively in paediatric patient care. Nurses, play workers, social workers and physiotherapist work together to provide a stimulating and caring environment for the patient before and after their operation. Nurses can apply 'magic cream' before any painful procedure, and this is used more frequently than in adults. In adults, topical lignocaine is reserved usually for those with needle phobia or those undergoing multiple or repeated cutaneous interventions.

In both children and adults, fasting for 6 hours before an operation is necessary. This is because gastroparesis combined with a relaxed gastrooesophageal sphincter increases the risk of aspiration and associated problems. Hence, peri-operative fluid management is key. This is especially important in paediatrics because of the greater surface area to volume ratio of a smaller body habitus. Children are more susceptible to insensible fluid and heat losses. Other important peri-operative considerations in both adults and paediatrics are pain and nausea and vomiting. Pain management in children is vital, but challenging. Children may not be able to communicate where the pain is, how bad it is and what the alleviating/ exacerbating factors are. It is also an aversive experience and it can make future management very difficult if the child associates pain with coming to the doctor. Nausea and vomiting must be managed carefully in both adults and children. In children especially, fluid losses and nutrition have greater impact because they generally have smaller body masses. However, in the UK, in my experience, whereas adults are given a set of standard anti-emetics in every case, the choice of which anti-emetic to use is more variable in the RCH.

Post operative management occurs in the recovery room in both adults and children, and depending on the surgery and how fit the patient is, they may be transferred onto ICU, HDU, the ward, or discharged home in the case of day surgery.

2) How are paediatric patients assessed pre-operatively?

When assessing any patient, it is important to follow a standard approach whereby a full history is taken, relevant systems are examined and any investigations needed are ordered. In terms of history, whereas in adults, pre-operative assessment may concentrate more on cardiovascular risk factors, this may only be of concern in a child with known cardiovascular or respiratory pathology. Modifiable risk factors such as smoking, taking alcohol and occupation are less relevant in a child, but other factors such as vaccination status and consanguinity are more important. It is also more difficult to take a history from children, because of understanding, communication skills still

developing and because the history usually involves three parties; the doctor, patient and the parents.
Examination of the patient is usually cardiovascular and respiratory and any other system if relevant, e.g. gastrointestinal in the case of U.C. for example.
Basic investigations such as blood tests, urine samples and radiology are used less frequently in paediatrics because they can be aversive and not necessary. They may also confer additional harm to the developing child, as in the case of abdominal or chest radiographs.
Lastly, the anaesthetist visits the patient before the operation, usually the night before or the morning of the operation. The purpose of the visit is to re-iterate what the plans are and offer an opportunity to answer questions. A brief history and examination is taken and any missing results are chased. This is also a chance to allay any concerns about the surgery.

3) What are the prevalent gastroenterological diseases in Australia? How to they differ from the UK?

The UK and Australia have both predominantly white populations, of Anglo-Saxon heritage. Conditions which are more prevalent in white populations are therefore more common in both the UK and Australia, as compared to a country such as India for example. The overall IBD incidence rates were 29.3 per 100,000 in Australia. In the UK, U.C. occurs with an incidence of 10-20/100,000 annually, whereas Crohn's disease occurs in 5-10/100,000 population. IBD can be diagnosed in childhood, but peaks in incidence between 10-40 years.
Colorectal cancer and coeliac disease is also more common in both Australia and the UK as compared to developing countries, but can affect all ethnic groups. In paediatric gastroenterology, both IBD and celiac disease may present to a paediatrician or the GP as failure to thrive, dropping off centile growth charts with gastrointestinal symptoms.

The paediatric population of both countries suffer less from diseases which tend to affect adults more; such as GORD or peptic ulcer or functional disorders. Neoplasms are also more rare in paediatrics, unless part of a congenital pathology such as familial adenous polyposis.
adenomatous
Hepatitis B is uncommon in the indigenous population of both countries, especially since introduction of healthcare worker immunisation. In paediatrics, it can be seen usually passed on via vertical transmission from the mother. It is more common in immigrant populations in both Australia and the UK. Cirrhosis of the liver due to viral infection is less common in Australia and the UK in comparison to countries such as Egypt, which has a high endemic Hepatitis C rate, but is more commonly related to alcohol misuse.

4) Reflect on how this experience has changed your professional development goals?

Spending time at RCH has been a beneficial experience for my professional development. I had settled on a chosen specialty and had a career in mind; however I had not considered the option of working abroad. My last placement had been at St Bart's hospital which is currently suffering financial mismanagement problems and as such redundancy was becoming commonplace for staff. Morale was low and working within such a system seemed gloomy but the only option. It was a pleasant surprise to find staff and patients at RCH very friendly, happy and contented. There appears to be a good work-life balance amongst the doctors, and Melbourne itself is a lovely city with a

commendable obsession with sport. As part of my development plan, I have been asking lots of questions as to the Australian application system, career options and how competitive it is within certain specialities. This experience has opened my mind to the possibility of spending time abroad within my profession.