ELECTIVE (SSC5b) REPORT (1200 words)

A report that addresses the above four objectives should be written below. Your Elective supervisor will assess this.

Describe the pattern of congenital GI malformations in Canada in comparison to other well developed countries (eg UK) and lesser developed countries (eg Vietnam)

In the UK oesophageal atresia (OA) has an incidence of 1 in 3000 births with recurrence rates in subsequent pregnancies of OA not part of a syndrome is at less than 1% 1-2. In comparison rates in Canada are like that of the UK with oesophageal atresia occurring in 1 in 2500 live births. Rates are poorly recorded in the developing world but one Indian study found a rate of approximately 1 in 10,500 which would suggest a significantly lower rate than that seen in the UK and in Canada.3

Exomphalos and gastroschisis occur in about 3 in 10,000 births in the UK 4. In comparison rates in Canada in 2009 were 4.4 in 10,000 births steadily rising from 3.1 in 10,000 from 2002 5. Rates are poorly recorded in the developing world but one Indian study found a rate of approximately 1 in 10,500 which would suggest a lower rate than that seen in the UK and in Canada.3

Congenital diaphragmatic hernias occur in 1 in 2500 births in the UK 6. Right sided lesions are rare (10-15%) in comparison to left sided lesions (85%) with right sided lesions carry a disproportionally high mortality and morbidity 7-8. In comparison rates in Canada are like that of the UK with congenital diaphragmatic hernias occurring in 1 in 2200 live births 9.

Hypertrophic pyloric stenosis occurs in 2-4 per 1000 births in the UK 10. It is significantly more common in males than females with reported ratios between 2:1 and 5:1. It is significantly more common in the white population than in other racial groups.

Imperforate anus and other anorecatal abnormalities have a wide range of incidences in the UK with minor abnormalities occurring in 1 in 500 births with major abnormalities occurring in about 1 in 5,000 births. In comparison rates in one Indian study showed a rate of all anorectal abnormalities at 6 in 10,500 births.3

The differences seen between the rates of congenital gastrointestinal abnormalities in comparison to that seen in the developing world can be attributed to the poor antenatal detection of such abnormalities in the developing world in comparison to the developing world. Also the universal access of health care in the UK and Canada would facilitate a higher rate of congenital anomaly diagnosis in comparison to the developing world were health care is not as accessible.

References

1) Goyal A, Jones MO, Couriel JM, et al; Oesophageal atresia and tracheo-oesophageal fistula. Arch Dis Child Fetal Neonatal Ed. 2006 Sep 91(5):F381-4.

2) Spitz L; Esophageal atresia and tracheo-esophageal malformations Pediatric surgery, 4th ed, Amsterdam:Elsevier Saunders, 2005:352-70

3) Saiyad SS, Jadav Hrishikesh R; Study of congenital malformations in central nervous system & gastro-intestintal tract. National Journal of Medical Research. 2012 2(2):121-123

4) Spitz L; Esophageal atresia and tracheo-esophageal malformations Pediatric surgery, 4th ed, Amsterdam:Elsevier Saunders, 2005:352-70

5) Public Health Agency of Canada; Congenital Anomalies in Canada 2013 : A Perinatal Health Surveillance Report. Ottawa, 2013.

6) van den Hout L, Sluiter I, Gischler S, et al; Can we improve outcome of congenital diaphragmatic hernia? Pediatr Surg Int. 2009 Sep 25(9):733-43.

7) Parate LH, Geetha CR, Vig S; Right sided congenital diaphragmatic hernia: A rare neonatal emergency. Saudi J Anaesth. 2015 Apr-Jun 9(2):227-9. doi: 10.4103/1658-354X.152900.

8) Topor L, Patrancus T, Caragata R, et al; Left congenital diaphragmatic hernia -- case report. Chirurgia (Bucur). 2015 Jan-Feb 110(1):84-7.

9) Puligandla PS, Skarsgard ED. The Canadian Pediatric Surgery Network Congenital Diaphragmatic Hernia Evidence Review Project: Developing national guidelines for care. Paediatrics & Child Health. 2016;21(4):183-186.

10) de Laffolie J, Turial S, Heckmann M, et al; Decline in infantile hypertrophic pyloric stenosis in Germany in 2000-2008. Pediatrics. 2012 Apr 129(4):e901-6. doi: 10.1542/peds.2011-2845. Epub 2012 Mar 19.

11) Best KE, Glinianaia SV, Bythell M, et al; Hirschsprung's disease in the North of England: prevalence, associated anomalies, and survival. Birth Defects Res A Clin Mol Teratol. 2012 Jun 94(6):477-80. doi: 10.1002/bdra.23016. Epub 2012 Apr 18.

Describe the levels of care and treatment available to patients with congenital GI malformations in Canada compared to other well developed contries (eg UK) and lesser developed countries (eg Vietnam)

Levels of care available in the UK and Canada are identical. Both healthcare systems are well funded and have a layered approach to healthcare. The lowest level of care is primary care. In the UK this level is performed by a general practitioner responsible for caring for the whole family. In Canada primary care is undertaken by a Family Doctor, a doctor responsible for the adults in the family. There is also a community paediatrician who is responsible for the children in the family. This differs from the UK where paediatrics is a secondary care speciality. The next levels of health care in the UK and Canada is secondary and tertiary care. These are the same in both countries and comprise of specialists care. Both seconday and tertiary centres provide intensive care in the UK and Canada.

Therefore a child born with congenital GI malformations has several routes of accessing care in both the UK and Canada. If diagnosed antenatally, the birth can be planned and early consultation with appropriate specialist secondary and tertiary care can occur. This would allow for the child to be worked up and prepped for any potential surgeries after birth. If the malformation is diagnosed afterbirth at a non-specialist centre or even in primary care, the child can be easily reffered to a tertiary centre for care of their GI malformation.

In lesser developed countries the access to health care is not as widespread and have many more layers to their healthcare. For example in Kenya the lowest level of care is provided by dispensaries, which are run by nurses and are desgined to treat simple ailments such as the common cold and flu. The next level up is the health centre which has at least one doctor. The health centre's aim is mainly preventative medicine rather than curative focusing mainly on childhood vaccinaitons. A health centre does not come equipped with theatres. The next level up is the sub-district hospital which is similar to the health centre but is managed mainly by doctors and has theatres capable of basic procedures such as caeserian sections. Next is the district hospitals which are the refferal point for sub-district hospitals, these usually have the resources to provide comprehensive medical and surgical services. The next level up is the county hospitals. Kenya has 47 counties each served by a county hospital which is the refferal point for district hospitals. District hospitals are well funded with access to specialist care and intensive care.

The above description of the healthcare system in Kenya shows a potentially lengthy refferal route for a child born with a congenital GI malformation. Only when reaching near the top tier of care in Kenya is intensive care support available making Kenya's ceiling of care equivalent to the UK and Canada's average secondary care.

What public health intiatives exist regarding congenital GI malformations (and congenital syndromes in general) in Canada and how do these compare to the initiatives that exist in the UK.

Antenatal care in Canada and the UK are similar. Both consist of regular antenatal appointments where the well being of the mother and child are checked. Both countries provide blood tests for the screening of common genetic conditions (eg Trisomy 21 and Trisomy 18) and ultrasound scanning for structural abnormalities. Both countries also provide definitve diagnosis via chorionic villus sampling and amniocentisis for at risk mothers.

In the UK a detailed structural scan, known as the mid-pregnancy anomaly scan takes place between 18-21 weeks. This scan would aim to diagnose all sturctural malformations including congenital GI malformations. In Canda a detailed ultrasound scan is offered to all women at 18-20 weeks of gestation.

In families with known syndromic GI malformation genetic testing would be offered and ante-natal diagnosis via chorionic villus sampling or amniocentisis for all subsequent pregnancies. This is available in both the UK and Canada.

Gain exposure to paediatric general surgery and become more comfortable with the pre and post op treatment of a paediatric patient.

The pre-operative assessment of a paediatric patient is similar to that of an adult patient. All patients need baseline bloods including a full blood count, renal function and liver function. Every patient also need a group and save (type and screen) or a cross-match in emergencies. All patient also require an electrocardiogram. Further tests would be determined by the comorbidities of a patient (eg Echocardiogram in a child with congenital heart malformations or in an adult with valvular disease).

Post operatively care differs slightly, especially in regards to feeding. In adults, a patient can be encouraged to feed and a doctor can assume that the patient will eat or drink provided they can tolerate it. In paediatric patients, especially in very young children, feeds have to be estimated and the patient has to be assessed for signs of intolerance (eg reflux, vomiting). Bowel habits are easier to judge in smaller children too.