

ELECTIVE (SSC5c) 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 bone cancers in children in Canada and discuss this in the context of global health

Primary bone cancers account for about 3% of childhood cancers, with metastases still accounting for the majority of bone tumours as in adults. There are two main types of bone cancer that occur in children: osteosarcoma and Ewing's sarcoma. Osteosarcoma is the most common, accounting for 20% of primary bone cancers. In the context of global health, incidence is relatively consistent, with a peak in the early teenage years of around 10 per 100,000 being reported across Canada, Europe, Asia, Latin America, USA and Australia. Worldwide there is also a second peak around the 8th decade of life. This peak is observed with a higher incidence in the UK, Canada and Australia. This difference could in part reflect more complete cancer registration in these countries, a number of environmental factors, or genetic differences between populations.

Ewing's sarcoma is less common than osteosarcoma and is the second most prevalent primary bone tumour in children. It is most commonly found in the pelvic bones, ribs and clavicles, or the diaphyses of long bones. This is compared with osteosarcoma, which usually occurs at the ends of long bones of the arms and legs.

Describe the provision of healthcare in the UK and compare it with healthcare provision in Canada

Canada and the UK both have universally available public healthcare systems dating back to the 1940s. Both countries have a private health sector, though this is less significant than the public. Broadly speaking the two countries have similar healthcare systems and my experience of them has differed largely based on my exposure to particular diseases and the fields of interest of the physicians and surgeons I have shadowed.

Brief overview of osteosarcoma as an example of an interesting case presentation to the paediatric orthopaedic department

Osteosarcoma is the most common type of primary childhood bone cancer. It is a malignant neoplasm of mesenchymal cells, producing malignant osteoid. Presentation may be with bone pain, most significantly during the night. Swelling may also be noticeable. In the absence (or presence) of these symptoms, a pathological fracture of, for example, the femur, may lead to diagnosis. Incidental finding based on radiology for an unrelated condition is also possible.

There are a number of other conditions thought to be linked and/or causal to osteosarcoma. Certain familial cases can be due to genetic mutations that increase the susceptibility of certain individuals to developing bone cancers. Higher prevalence is seen with bone dysplasias including Paget's. Increased numbers of osteosarcoma are also observed in a few of the rarer syndromes, including Li-Fraumeni. Links with environmental factors are relatively scarce and have less supporting evidence.

Osteosarcomas are most common at the metaphyses of long bones, particularly the proximal tibia or humerus, or the distal femur. Radiologically, a number of classical features may be seen. There may be signs of medullary and cortical bone destruction, with a wide zone of transition. Signs of an aggressive periosteal reaction may be seen, with a sunburst appearance and Codman's triangle. Soft tissue mass may be present around the lesion. Further investigation for confirmation of diagnosis and staging include biopsy, MRI and PET CT scan.

Management of osteosarcoma is a combination of chemotherapy and surgery. Lung metastases are relatively common, so CT chest is performed during staging, and lung resection may be necessary in addition. Surgery alongside chemotherapy to resect the tumour aims to salvage as much of the limb as possible. Amputation is now far less commonly required and outcomes are significantly improved with the use of chemotherapy compared with prognosis just a few decades ago.

Personal/professional

I've thoroughly enjoyed the time I have spent at British Columbia Children's Hospital. It has been interesting to see the differences between the UK and Canada, both in terms of the healthcare systems in general and the workplace in general. As the countries are relatively similar (public health service, no language barrier, developed country, etc.), I've been able to take advantage of being in a new place to get experience in a specialised area of medicine. This has meant that I've seen a number of patients with rarer conditions in the context of orthopaedic complications. The placement was an opportunity to spend more time in an area of medicine that I am considering pursuing in the future, so I was grateful to have some more time before qualifying to see as much as possible. Given the short periods of time we get to spend in each specialty back home, the elective period is a great opportunity to get a better idea of what working in a department might be like. This is particularly the case if the original placement was carried out early in our degree, when it is useful to go back after more years in clinical medicine. It would also be a great opportunity to get some experience in an area of medicine that is not really covered with an official placement, for example plastics/ENT/etc. It's been amazing to spend a month in another country at such a renowned children's hospital. My first rotation in foundation training will be in paediatric surgery, so it's been a useful placement to carry out as my last before starting work later this year. I would recommend an elective in Canada to anyone looking at going to a development country with similar hospital set ups to the UK.