

## **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 prevalence of different types of endocrine disorders in the UK in comparison to worldwide.**

The commonest endocrine disorder in the UK is obesity. Obesity is defined as, 'excessive weight presenting health risks because of the high proportion of body fat', and is measured by a body mass index (BMI), greater than or equal to 30 (1). A BMI greater or equal to 25 is classed as being overweight (1). In the UK, the proportion of overweight (including obese) individuals increased from 58 to 65% in men, and 49 to 58% in women, from 1993-2011 (2). In the obese population, prevalence increased from 13% in 1993 to 24% in 2011 for men, and from 16% to 26% for women (2). In comparison, the UK has the second highest prevalence of obesity among EU countries, although it is in keeping with a general trend in increasing obesity throughout the EU (1). A 2014 OECD report found that the prevalence of overweight and obese individuals was more than 50% in 17 EU member states (1). Within the obese population, gender appears to play little role in the prevalence of obesity, with prevalence being 25.1% in women and 24.4% in men in the UK (1).

Type-2 diabetes is also a common endocrine disorder. In the UK, prevalence of diabetes stands at 6.0%, affecting 2.7 million individuals in England alone (3). Similarly, in the EU, 6% of the population between 20-79 years suffer from diabetes (1). The International Diabetes Federation estimates that worldwide prevalence of diabetes is at 8.3%, or 387 million people from ages 20-79 (4). UK statistics also show a link between ethnicity and diabetes, with a prevalence of 8.9 per 100 in the Pakistani/Bangladeshi community compared to 1.7 per 100 in the White population (3).

Cushing's syndrome is a rare disorder, with an estimated 0.1% of the general population having Cushing's Syndrome due to exogenous steroid use (5). Little data on the prevalence of endogenous Cushing's is available, although a register in Denmark reported an incidence of 2 cases per million individuals (5).

The most common cause of thyroid disease worldwide is the simple diffuse goitre, a result of iodine-deficiency (6). Iodine-deficiency affects a third of the world's population, and goitres are prevalent in approximately 80% of that population (6). In the developed world, autoimmune disease is a more likely cause of thyroid dysfunction, such as Graves' and Hashimoto's thyroiditis (6). In developed populations, the prevalence of hypothyroidism is between 1-2%. In the UK, prevalence is 3.3 per 1000 women; incidence stands at 0.6 per 1000 men annually, compared to 3.5 per 1000 women annually (6). Hyperthyroidism is less common than hypothyroidism in developed countries, with a prevalence of between 0.5-2.0% in women. In the UK, the prevalence is 4.7 per 1000 women, while incidence is 0.8 per 1000 women annually (6). The incidence of hyperthyroidism in men is lower, with less than 0.1 individuals per 1000 diagnosed annually (6).

**Describe the process leading to referral to a tertiary endocrine centre in the NHS**

The Endocrinology department at Barts offers both a secondary and tertiary referral service, although patients are typically referred from secondary care, having had prior investigations and assessment

done. Diagnostic uncertainty and the need for more specialised tests frequently warrant referral to the Endocrinology department.

The Endocrine department also sees private patients not covered by the NHS. This group includes foreign visitors or patients who wish for quicker appointments. For this patient group, appointments can be arranged directly with the department. However, while appointments may be scheduled faster, investigative facilities remain shared with Barts Health, and may not be expedited.

**How is Cushing's Syndrome investigated and managed Barts Hospital?**

Cushing's Syndrome is caused by excessive glucocorticoids, either of exogenous or endogenous origin (7). The most common cause of Cushing's Syndrome is the chronic use of corticosteroids. Endogenous Cushing's can either be Adrenocorticotropic hormone (ACTH) dependent or independent. ACTH-dependent Cushing's may stem from either from a tumour of the pituitary or elsewhere. Cushing's originating from an ACTH-secreting pituitary adenoma is known as Cushing's Disease, and is the commonest form of endogenous Cushing's Syndrome (7).

During investigations, the first step is to determine whether or not cortisol levels are raised. This can be done by collecting 24h urinary-free cortisol (UFC), or by an overnight 1mg dexamethasone suppression test (DST). High levels of 24h UFC or failure to suppress cortisol on the DST indicate excess cortisol production.

The low dose dexamethasone suppression test (LDDST) may also be used to confirm Cushing's syndrome, especially if there is uncertainty following initial testing. 0.5mg dexamethasone is given at 6h intervals, and cortisol levels are measured at the start and end of the test. ACTH is also measured before the first dose of dexamethasone is given.

Initial investigations should also include anterior pituitary function tests to exclude other endocrine dysfunction.

After Cushing's has been established, the next step is to localise the cause of the excess cortisol. CT and MRI scans are utilised to locate adenomas either in the abdomen or in the pituitary gland. Inferior petrosal sinus sampling (IPSS) may be used in patients with high ACTH levels with inconclusive MRI scans.

Management of Cushing's Syndrome differs based on the location of the tumour. In Cushing's disease, transphenoidal surgery aims to completely resect the pituitary adenoma. Radiotherapy is a later option should the tumour not be completely resected, or should symptoms remain post-surgery. In ACTH-independent Cushing's Syndrome, patients undergo adrenalectomies to remove cortisol-producing adenomas (7). Medical management of Cushing's Syndrome involves cortisol-synthesis inhibitors (metyrapone and ketoconazole) (7).

**Improve clinical, practical and decision-making skills.**

**In this placement, I have had the opportunity to practice several clinical and practical skills, such as;**

- **Prescribing drugs and fluids**

- **Peripheral IV cannulation**
- **Venepuncture**
- **History taking and examination**
- **Performing ECGs**

During these few weeks, I have had many opportunities to clerk and present cases, both on the ward rounds, as well as during the Friday meetings. I found it useful to be able to spend time with patients, slowly unravelling their history before conducting thorough clinical examinations. In particular, it was impressed upon me while I had to allow the patients time and space to speak, I also had to develop means to keep the conversation on track.

I also had the opportunity to assist in an open right adrenalectomy, and spent some time with the anaesthetist pre-op. The operation allowed me to develop my understanding of the complexities of adrenal surgery, such as the pre-op anaesthetic considerations, and the intra-operative care in handling and dissecting the adrenal and neighbouring structures.

On a practical level, I assisted and shadowed the junior doctors on the ward, helping them to write to-take-aways (TTAs), retrieve documents, and write up drug charts. I was also asked to come up with plans for several patients, which were later reviewed by the team.

Overall, I am grateful that the team gave me more responsibilities, allowing me to further my clinical and practical skills. This will stand me in good stead as I soon begin my medical career.

## References

1. **OECD. Health at a Glance: Europe 2014. 2014.**
2. **Health and Social Care Information Centre LS. Statistics on Obesity, Physical Activity and Diet: England, 2013 UK: 2013.**
3. **Diabetes: Facts and Stats. 3 ed. UK: Diabetes UK; 2014.**
4. **IDF Diabetes Atlas. In: Federation ID, editor. 6th ed: International Diabetes Federation; 2014.**
5. **Prague JK, May S, Whitelaw BC. Cushing's syndrome2013 2013-03-27 15:15:00.**
6. **Vanderpump MPJ. The epidemiology of thyroid disease. British Medical Bulletin. 2011;99(1):39-51.**
7. **Guaraldi F, Salvatori R. Cushing syndrome: maybe not so uncommon of an endocrine disease. J Am Board Fam Med. 25. United States2012. p. 199-208.**