**Endocrine System**

**Question 1**

Sara Haines, a 38-year-old woman, running a restaurant in at Toowoomba is diagnosed with Cushing syndrome after she complained of drastic weight gain for over six months, with menstrual abnormalities and significant facial hair growth. Cushing syndrome can be defined as a metabolic disorder, which is mainly caused by adrenal cortex overproducing corticosteroid hormones, often resulting in obesity and high blood pressure (Karageorgiadis et al., 2015). As explained by Lodish & Stratakis(2016), one of the most common causes of abnormally high levels of hormone cortisol is the high degree of usage of corticosteroid medications. The corticosteroids in the form of steroids and other anti-inflammatory drugs present in betamethasone, mainly help in reducing inflammation, swelling and production mucus in the airways of a person having asthma, are the primary causative factor, in this case, to cause high levels of cortisol for Mrs Haines.

Long-term exposure to excess levels of glucocorticoids can be used to describe Cushing syndrome, mainly caused by the excessive secretion of adrenocorticotropic hormone (ACTH) from a pituitary tumour, i.e. adenoma (Findling & Raff, 2017). The adrenal gland, stimulated by ACTH, secrets cortisol and other steroid hormones. Due to the stimulation by corticotrophin-releasing hormone (CRH) from the hypothalamus, pituitary gland produces ACTH to be released into petrosal venous sinuses in a diurnal pattern, which is independent of circulating cortisol levels. The release of CRH can also be stimulated by the neuronal input at the hypothalamic level, where the peak release occurs just before awakening, followed by the decline of ACTH levels throughout the day (Stratakis, 2016).



(**Source**: aafp.org)

**References**

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**Question 2**

As discussed earlier, the exposure to high levels of hormone cortisol for a long time is the principal reason causing Cushing syndrome in the human body. The use of oral corticosteroid medication may have caused Cushing syndrome for Mrs Haines. Cushing syndrome, which is also known as hypercortisolism stimulates overproduction of cortisol, which creates some of the hallmark signs, such as a fatty hump between two shoulders, pink or purple stretch marks on the skin and a rounded face (Lacroix et al., 2015). The research of Loweet al. (2017) confirmed that the particular disease also results in bone loss, high blood pressure, and type 2 diabetes in some situations. Depending on the levels of excessive cortisol, hence, the signs and symptoms of Cushing syndrome can vary from one person to another.

Nieman (2015) discussed that some of the common signs and symptoms include skin changes and progressive obesity, which principally evident in the case of Mrs Haines, who complained of drastic weight gains over the last six months. Hence, weight gain and fatty tissue deposits, particularly around the midsection and upper back alongside face and between the shoulders are the primary signs. Additionally, pink and purple stretch marks, i.e. striae on the abdomen, breasts, thighs and arms can be described as the main symptoms apart from thinning and fragile skin that easily captures bruises. Apart from reduced healing capacity and acne, women like Mrs Haines with such a syndrome experience irregular menstrual periods along with thicker facial hair and visible body (Bornstein et al., 2016). Muscle weakness and severe fatigue are some other signs of this disease.