Fayoum University

Efficiency and Safety of Preoperative Embolization of Paragangliomas of The Head and Neck

Thesis Protocol

Submitted in Partial Fulfillment of

The M.D Degree in

Radiology

By

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The paraganglia are clusters of highly vascularized neuroendocrine cells dispersed throughout the body and closely related to the autonomic nervous system. Tumors arising from the paraganglia called paragangliomas. **(Fatima et al. 2020; Meli et al. 2006)**

Paragangliomas of the head and neck are rare neoplasms accounting for less than 0.5% of all head and neck tumors, with incidence range of 1:30,000 to 1:100,000, and the average age at diagnosis is variable in different literatures it was reported to be from 34.5 to 55 years. **(Noujaim et al. 2020; Chapman et al. 2010)**.

Head & neck paragangliomas originate from the chemo and baroreceptors cells and generally non-secretory. The most common of these occur at the carotid body (carotid body tumor), whereas others may arise from chemoreceptor cells around the vagus nerve (glomus vagal), at the jugular bulb (glomus jugular), the middle ear (glomus tympanicum**). (Chapman et al. 2010)**

It has long been recognized that chronic hypoxia is a risk factor for paragangliomas including those who lived at high altitude, with increased risk

particularly in women. Interestingly, this link is now explained by the discovery of over 19 genes predominantly in pseudohypoxia related pathways including over 10 of these genes identified in head and neck paragangliomas.**(Williams 2017)**

Independent of their location in the head and neck, paragangliomas are highly vascular and usually benign, but locally infiltrating, potentially lethal, and difficult to treat. The malignant potential ranges from 2 to 8% of cases. **(Chen et al. 2020)**

As these tumors may be locally destructive or have malignant tendency so surgical resection is required, but high irrigation may result in a notable amount of bleeding during surgery, in some cases hindering the complete removal of the lesion. So, pre-surgical embolization is an intervention that has been shown to decrease the time of the surgical procedure, the amount of blood loss during surgery, and therefore morbidity and mortality. The most commonly used method for embolization of these lesions is transarterial. It involves super-selective catheterization of the arterial feeders of the glomus and embolizing the lesion. However, transarterial pathway is conditioned to the vascular anatomy of the afferent arteries, their tortuosity, atherosclerotic disease, or the possibility of producing a vasospasm during embolization. In addition, special care must always be taken with dangerous anastomoses between the branches of the external carotid artery and the internal carotid, vertebral and ophthalmic arteries, especially if

particles embolic agents are used. So, in some cases direct puncture technique was described. **(Pérez-García et al. 2020)**

The purpose of the work is to assess the safety and effectiveness of pre-operative embolization of head and neck paragangliomas in simplifing the surgical procedure and facilitating the complete removal of the tumor.