

immunohistochemistry. The optimal imaging regime was then used for a ^{131}I therapy study.

Chemokine mRNA and protein analysis indicated a substantial increase in expression levels of chemokines and growth factors, involved in MSC tumor homing, after heat exposure. In addition, MSCs showed directed migration towards the supernatant of thermo-stimulated cancer cells. *In vivo*, with the optimal regime, we observed a significantly increased uptake of ^{123}I in tumors of heat-treated animals (41 °C) when thermostimulated 24h after CMV-NIS-MSC injection compared to control animals (37 °C). Immunohistochemical staining of tumor sections showed strong tumoral NIS-specific immunoreactivity and RT-PCR an increased NIS mRNA expression in heat-treated tumors, thereby confirming tumor-selective, temperature-dependent MSC migration. CMV-NIS-MSC-mediated ^{131}I therapy combined with regional hyperthermia resulted in a reduced tumor growth that was associated with prolonged survival of regional heat-treated animals compared to normothermic mice and to the saline control group.

In summary, we have demonstrated a significantly increased, selective MSC migration towards the tumor stroma after regional hyperthermia in the ^{123}I imaging study. The combination of MSC-mediated NIS gene therapy with mild regional hyperthermia resulting in stimulated therapeutic efficacy of NIS-mediated ^{131}I therapy.

Adrenal

ADRENAL - TUMORS

Adrenal Incidentalomas: Prevalence and Referral Patterns in a UK University Hospital Using Real-Life Data

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The estimated prevalence of adrenal incidentaloma at abdominal CT scan is 0.5-2% (1). However, from clinical practice, we noticed that incidentalomas are referred from other imaging modalities (eg MRI) and of other sites (eg thorax, spine). We therefore explored the relationship between prevalence rates and (i) imaging modality and (ii) its change over time, in a real world clinical setting from a large UK teaching hospital/trauma centre. We also examined the referral pattern of potential lesions to endocrinology. We extracted data from all radiology reports for all CT and MRI scans from Jan 2018-Oct 2019. We utilised a key phrase search strategy (eg adrenal adenoma/lesion/mass/nodule/incidentaloma, incidental adrenal, indeterminate adrenal). Where possible we excluded false hits (eg no adrenal lesion). These were linked to the referral patterns as identified by a referral logged or an attendance (new or follow-up) to endocrine clinic 3 months post index scan. Preliminary data showed that, from a total of 127878 scans performed, 2604 potential lesions were reported (prevalence 2.0%),

comprising 2496/88838 (2.8%) CT scans and 108/39040 (0.3%) MRI scans. The number of scans/month increased in 2019 vs 2018 (6.9% for CT and 12.6% for MRI). Only 9.0% and 15.7% of reported potential lesions detected by CT and MRI, respectively, were referred for endocrine review. Hence, MRI patients were more likely to be referred than those with CT scans (p=0.018). Referral rates were lower in 2019 than 2018 (8.6% vs 14.4%; p less than 0.001). This approach has its limitations but allows efficiently review of large cohorts. Adrenal incidentalomas pose a rising challenge in view of increasing reliance on scanning. Despite a dedicated adrenal multidisciplinary team with a national track record in improving management of incidentalomas (2), the referral rate of potential lesions is worryingly low and not improving, with >90% of cases overlooked. This work is part of on-going innovation to enhance the pick-up rate for these cases whilst addressing the increased endocrine workload in a cost-effective manner. 1. Barzon L, Sonino N, Fallo F, Palu G, Boscaro M. Prevalence and natural history of adrenal incidentalomas. *Eur J Endocrinol.* 2003;149:273-285. 2. Hanna FWF, Issa BG, Lea SC, George C, Golash A, Firn M, Ogunmekan S, Maddock E, Sim J, Xydopoulos G, Fordham R, Fryer AA. Adrenal lesions found incidentally: how to improve clinical and cost-effectiveness. *BMJ Open Quality.* 2019;In press.

Genetics and Development (including Gene Regulation)

GENETICS AND DEVELOPMENT AND NON-STEROID HORMONE SIGNALING I

IIM May Influence Matured Oocytes' DNA Methylation of PCOS Patients

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Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in women of childbearing age and is the main cause of anovulatory infertility. To increase the number of oocytes obtained, controlled ovarian stimulation (COS) has become a routine choice for in vitro fertilization-embryo transfer (IVF-ET), which is one of the common assisted reproductive technologies for PCOS patients. However, for these patients, there is a high risk of ovarian hyperstimulation syndrome (OHSS). Obtaining in vitro maturation (IVM) of immature oocytes, and then in vitro fertilization and embryo transfer of mature oocytes provides a possible way for people to solve the above problems. Since the IVM technology will expose oocytes to in vitro conditions for a longer period of time, theoretically increasing the risk of the oocytes being affected by the culture environment, further research and explorations are needed for study in gene programming, epigenetics, etc. Therefore, to explore the impact of IVM operation on embryonic development is of great significance for further clarifying assisted reproductive safety and improving IVM operation conditions. Here we focused on DNA methylation reprogramming process which was essential for embryonic development. We tested the DNA methylation of sperm, IVM oocytes and IVM generated early stage embryos including pronucleus,