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Unique Presentation and response to treatment of a Cutaneous Hemangioma with Visceral Extension

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Case report: 2 months old female newborn was seen in her pediatric office for her well visit and vaccines. Was formula fed and was thriving well. Mother did have concerns about her red rash that she developed at birth (tiny swelling) which seemed to grow not just on the outside but also inside and wanted her to be evaluated. On exam she was a happy active baby with clear lungs and normal heart, all peripheral pulses felt and strong, abdomen-soft, non-tender with mass palpated within the left upper quadrant with an overlying erythematous soft swelling measuring about 3.75*2.8 cm in size consistent with hemangioma. It was vascular, non-tender, soft in consistency, mass below the swelling was freely mobile and with clear margins. Interestingly the temperature on the swelling was at least 1 degree Fahrenheit higher than the surrounding skin. She is a product of normal vaginal delivery and no perinatal issues. Ultrasound was ordered due to rapid increase in size and the intra-abdominal swelling was noted to hyperechoic areas and heterogenicity and concerns of malignant lesions were raised and patient was promptly referred to pediatric hemato-oncologist who reviewed the ultrasound, examined the patient and concluded that the intra-abdominal mass is also a hemangioma and started the patient on a beta blocker (propranolol 2.3 mg twice daily). Follow up exam shows that the swelling is now stabilized and patient had no side effects. She was hemodynamically stable.

Discussion: Hemangiomas are most common vascular tumors in infancy with increased occurrence in female infants. Hemangiomas are clinically diagnosed and usually have a benign course and need no management as they regress with age. Visceral hemangiomas can be life threatening and may need imaging and liver being the common organ affected. Treatment is based on the nature, location, complications and rapidity of the growth interfering in normal functioning. Non-selective beta blocker (namely propranolol) has been used more commonly in the recent years and has had promising results. Other treatment options are steroids, low-dose cyclophosphamide, interferon alpha, laser therapy and surgery in rare cases. Our case stands out that despite it was a visceral hemangioma and the radiological findings of possible malignant changes, our patient responded well to treatment and had no associated complications. Rapidly enlarging hemangiomas can be concerning to parents and with further referrals and investigations could be challenging in infants.

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Hair follicle regeneration from human pluripotent stem cells

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Hair follicle (HF) morphogenesis and regeneration depend on intensive and reciprocal interactions between epithelial and mesenchymal components. Currently, attempts to regenerate HFs depend on combining receptive epithelial and trichogenic dermal mesenchymal components and grafting them into an in vivo environment. Unfortunately human HF bulge stem cells (BSCs) are not suitable for this purpose because the isolation and propagation of human HF BSCs for tissue engineering purposes remains a challenge. Here we developed a strategy to differentiate human embryonic stem cells (hESCs) and induced pluripotent stem cells (hiPSCs) into CD200+/ITGA6+ BSCs that can reconstitute the epithelial components of the HF. Importantly, co-transplantation of hESCs or hiPSC-derived CD200+/ITGA6+ cells with trichogenic mice dermal cells into immunodeficient nude mice resulted in HF formation. Histological analysis revealed that the obtained HFs posses all HF lineages including the hair shaft and the inner and outer root sheaths. Human HF stem cell markers such as keratin-15 were detected in reconstituted HFs. The human origin of the epithelial cells in the new HFs was confirmed by positive reactivity for human-specific nuclear antigen. In this context derivation of functional HF BSCs capable of inducing a new hair formation suggest a major step toward developing cell-based treatments for alopecia.

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