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Implementation of digital pathology in the workflow for an integrated health system

Douglas J Hartman

University of Pittsburgh Medical Center, USA

The University of Pittsburgh Medical Center (UPMC) has been at the forefront of implementing and adopting digital pathology. UPMC is an integrated health delivery system, operating more than 20 academic, community and specialty hospitals, more than 500 doctors' offices and outpatient sites, employs nearly 3,600 physicians and offers an array of rehabilitation, retirement and long-term care facilities. Digital pathology has included telepathology as well as primary sign-out. I will discuss the lessons learned from early adoption and recommendations for the optimal utilization of digital pathology will be discussed. We have begun integrating digital pathology in a prospective, in-line fashion within the workflow of our laboratory and this process will be discussed. Some of these lessons include the workflow within the histology/gross laboratory (pre-Imaging variables) as well for the pathologist sign-out work. Additionally, our telepathology efforts will be discussed. We have developed relationships with other sites in the United States as well as several international sites. We have also begun the process of integrating image analysis into the routine workflow for diagnostic pathology. Future areas for development in the field of digital pathology will also be discussed.

hartmandj@upmc.edu

Exposure to excess phenobarbital negatively influences the osteogenesis of chick embryos

Yu Yan

Jinan University, China

Phenobarbital is an antiepileptic drug that is widely used to treat epilepsy in a clinical setting. However, a long term of phenobarbital administration in pregnant women may produce side effects on embryonic skeletogenesis. In this study, we aim to investigate the mechanism by which phenobarbital treatment induces developmental defects in long bones. We first determined that phenobarbital treatment decreased chondrogenesis and inhibited the proliferation of chondrocytes in chick embryos. Phenobarbital treatment also suppressed mineralization in both *in vivo* and *in vitro* long bone models. Next, we established that phenobarbital treatment delayed blood vessel invasion in a cartilage template, and this finding was supported by the down-regulation of vascular endothelial growth factor in the hypertrophic zone following phenobarbital treatment. Phenobarbital treatment inhibited tube formation and the migration of human umbilical vein endothelial cells. In addition, it impaired angiogenesis in chick yolk sac membrane model and chorioallantoic membrane model. In summary, phenobarbital exposure led to shortened lengths of long bones during embryogenesis, which might result from inhibiting mesenchyme differentiation, chondrocyte proliferation and delaying mineralization by impairing vascular invasion.

283329554@qq.com