

Strengthening the Role of Ocular Pathology in Clinical Thinking Training Targeting for House Staff

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Ocular pathology serves as one vital branch subject of histopathology, and also as a basic ocular science analysing the pathogenesis of eye disease, the regular pattern of disease progress, and ocular morphology, tissue metabolism and functional changes noted during the onset of ocular diseases. The underlying purpose lies in revealing and investigating the mechanism of such diseases and the nature of lesions, providing essential theoretical evidence to diagnosis and treatment of eye diseases. Ocular pathology acts as a bridge connecting basic and clinical medical science¹. Clinical ophthalmologists, especially junior house staff, should attach importance to ocular pathology, understand, be familiar with, and master basic knowledge in ocular pathological subject to cultivate sound clinical thinking and analytical ability and to improve comprehensive diagnosis and treatment efficacy in clinical setting. In a sense, the training of ocular pathology targeting for ophthalmological resident doctors better facilitates them to establish clinical thinking, and lays a solid foundation for ensuing personal development. Department of ocular pathology strengthens efforts to cultivate clinical thinking of house staff by providing basic training of ocular pathology, and creates favorable conditions to attract clinical ophthalmologists

to attend training programme in department of ocular pathology. Clinical thinking is the basic skill of clinicians and main content of house staff training. In addition, clinical thinking also functions as a process of rational knowledge during which clinicians thoroughly understand disease symptoms, comprehensively analyse and reason diseases using theoretical knowledge, and elucidate the nature of diseases. Only those qualified clinicians with desirable clinical thinking are able to understand various sources of clinical information and constantly improve their medical skill. Ophthalmic clinical thinking training requires that the trainees have a solid foundation of ophthalmology knowledge, meantime, ophthalmic pathology training serves this purpose. In order to enable house staff to acquire excellent clinical thinking and analytical ability, special attentions should be emphasized upon the following aspects justly integrated into the whole training procedure.

Stress the relationship between pathological manifestation and clinical changes, improve clinicians' analytical ability

During the occurrence and progression stages of ocular diseases, clinical manifestations depend upon pathological changes. Different pathological changes are accompanied by respective clinical manifestations. Therefore, ocular pathological training enables trainees to be accustomed to reverse thinking, identify pathological changes through clinical observations, understand the nature of ocular diseases, and cultivate satisfactory clinical quality. For instance, the patients with endophthalmitis present several clinical features, such as conjunctival congestion,

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corneal edema, hypopyon and vitreous opacity^{2,3}. We can grasp this opportunity to let trainees ponder the pathological basis of lesions observed so as to evaluate the severity of endophthalmitis in essence and analyse related pathogenesis, which enables clinicians to know the association between basic pathology and clinical practice, and accelerates the establishment of clinical thinking. Trainers are obliged to guide house staff to employ logical reasoning. In detail, trainees are taught to analogize the whole process and all lesions of ocular diseases by observing the structures of affected organs and tissues and the transformation rules of lesions on the basis of protopathy, analysing complicated lesions in a logical manner. Correspondingly, the clinical thinking established through this training session will be more flexible and innovative.

Cultivate dialectic clinical thinking through ocular pathology training

Clinical thinking mainly includes empirical thinking, theoretical thinking, logical thinking, imagery thinking, branch thinking and integral thinking, etc⁴, which should be strengthened during ocular pathology training courses targeting house staff to attain the goal of comprehending by analogy in clinical practice. For instance, imagery thinking, commonly employed by clinicians, functions as processing nastic materials, and contributes to the final diagnosis of respective diseases. Such thinking describes the condition of diseases in a intuitive manner, enables physicians to identify internal fundamental changes by observing organic morphological alterations. Ocular pathology, analysing the morphology of eye and its adnexa, requires learners have imagery thinking. Therefore, general and microscopic observations of ocular pathological changes provide favorable conditions for cultivating aptitudes in imagery thinking. In cases of intraocular retinoblastoma, the most characteristic pathological changes are oncocytes with Rosette. The terminology of Rosette, translated as 'Rose bouquet' in An English-Chinese medical dictionary, actually illustrates that the twisted arrangement of tumor cells looks like wild chrysanthemum or rose bouquet⁵. The

trainees should guide the trainers to imagine blooming chrysanthemum. Using a visual image to describe the morphology of a lesion is able to improve the training effect on imagery thinking of house staff.

Understanding the significance of pathological diagnosis is beneficial for choosing suitable clinical therapy

Proper histopathological diagnosis provides vital guidance for clinical physicians to confirm effective therapies and evaluate the prognosis of patients in clinics. Clinicians are obliged to master the significance of pathological examination and diagnosis, which is of importance to final diagnosis and treatment. In the treatment of intarocular tumors, the agents injected into retinoblastoma spread and transfer through optic nerve. Pathological examinations reveal the metastasis of carcinoma, and is of significance to guide clinical prognosis. Cancer cells invade and penetrate lamina cribrosa, and reach retrobulbar optic nerves (extraocular retinoblastoma) or the broken end of excised optic nerves in affected children. Adjuvant radiotherapy should be performed postoperatively⁶. The pathological examination of ocular inflammation-related diseases provides guidance to clinical treatment and diagnosis. Pathological examinations reveal fungus and bacteria in corneal infectious inflammation, and adjust the drug administration. Ocular pathology training scheme designed for house staff not only lays a solid clinical foundation, but also serves as part of clinical training and clinical thinking.

Hold Ophthalmic Clinico-Pathological Conference

The so-called Ophthalmic Clinico-Pathological Conference (OCPC) discusses those cases with unidentified origins and unclear diagnosis requiring removal of the eye. Pathological examinations (eye biopsy, vitreous humor smearing, and PCR analysis), assist clinicians to identify the illness origins and provide novel thinking for clinical diagnosis. Both clinical ophthalmologists and pathologists should participate in such discussions⁷. In order to

cultivate clinical thinking of clinicians, they are encouraged to attend OCPC vigorously. Firstly, physicians should be allowed to participate in pathological examinations of the sophisticated cases, witness the whole process of general microscopic observations, and observe pathological changes guided by experienced senior clinicians. Secondly, house staff are obliged to collect general clinical records and fully prepare for the clinical pathological conferences comprised of professors and pathologists organized by the hospital, providing a rare opportunity of hearing the suggestions and advice given by experienced clinicians and proposing opinions and ideas of their own.

OCPC enables learners to properly combine pathological findings with clinical information, and understand the nature of illnesses which can not be identified by pathological findings. A serial steps, including discussing a sophisticated case, listening to professional advice, moderately utilizing divergent thinking, and raising interesting questions and novel perspectives, should be followed to cultivate desirable clinical thinking⁸. The pathological trainees should select representative cases for demonstration, such as intraocular ciliary medulloepithelioma, a rarely seen poorly-differentiated malignant tumor, mainly affects children. It is mainly monocular type, and complicated by glaucoma or cataract. The tumors are not easily noticed due to slow growth and unnoticeable affected sites. B-mode ultrasound examination is unable to observe the anterior segment clearly, and even UBM fails to observe the sites of tumors. Therefore, ciliary medulloepithelioma is prone to be misdiagnosed as glaucoma treated by repetitive glaucoma surgeries⁹. We recorded a case previously, who was subject to repetitive glaucoma surgeries since 4 years old, even evisceration and orbital implant. Tumor was noted on the surface of orbital implant at the age of 17. The patient was diagnosed as medulloepithelioma by pathological examination, and confirmed as ciliary medulloepithelioma in subsequent OCPC. The misdiagnosis largely ascribed to the limited and narrow diagnosis thinking of clini-

cians, who neglected the possibility that the refractory complicated glaucoma and cataract affecting the patient might be caused by ciliary medulloepithelioma. So, the clinicians did not delivered the samples for pathological examination because they were not tumor specimen. Through discussing this case, it not only broadens the horizon of house staff, but also enables them to establish and expand clinical thinking.

Ocular pathological training program renders ophthalmic house staff know the deduction process from pathogenesis, progression and pathological changes, and enables them to better understand and master ocular diseases by observing morphological and functional changes. In addition, innovative clinical thinking can be fostered via such pathological training courses.

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