Insights of Ophthalmic Pathology

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Ophthalmic pathology in the Philippines has come a long way since the establishment of the Philippine Ophthalmic Pathology Society in 2020. It has provided the much-needed avenue for eye doctors to explore the wonders and mysteries of different eye diseases as they affect the human body. Through the microscope, we are able to answer queries raised by complex cases, fortify our knowledge of the different disease processes of the eye, and enlighten curious minds during clinicopathologic conferences.

Ophthalmic pathology serves as the backbone for all the advancements in ophthalmology, without which we would not be able to cope with the havoc caused by diseases affecting the eyes. An ophthalmologist of any subspecialty with a strong foundation in ophthalmic pathology is armed with the basic knowledge of disease processes, which enables him to be confident, exercise good clinical judgement, and administer the proper medical and surgical management.

Case reports and case series are important as these form a pool of valuable data for future reference in systematic reviews, and can themselves inspire further research. One such example was the case series of liquid biopsy for retinoblastoma by Dr. Jesse Berry.[1] Dr. Berry obtained aqueous humor samples from enucleated eyes of retinoblastoma patients and from eyes of retinoblastoma patients prior to injection of intravitreal chemotherapeutic agent, and demonstrated tumor-derived cell-free DNA in the aqueous humor. Dr. Berry and her colleagues later discovered gain of chromosome 6p from examining the aqueous humor of retinoblastoma eyes.[2,3] Dr. Berry's case series has spurred similar studies by other researchers. The acquisition of chromosomal information from the tumor through analysis of the aqueous humor provides vital insights for treatment planning and prognosis without the need for the traditional tissue biopsy, which is risky due to potential tumor spread outside the eye. This new approach is particularly important as retinoblastoma is the most common intraocular tumor in childhood and direct tumor biopsy carries a significant risk of metastasis.[4,5,6,7,8,9,10]

We have made the pharmaceutical industry flourish because most of the time the aim of treatment is to control the disease and not to eradicate it completely. Knowing the exact pathology of diseases allows us to explore other modalities of treatment. In the case of age-related macular degeneration (ARMD), there is more to just angiogenesis. Studies of the molecular constituents of drusen have shown that in ARMD, there is an immunologic component involved. Drusen exhibited signs of inflammation brought about by derivatives of the complement system, immune-associated responses, and protein by-products.[11,12,13,14] My mentor Dr. William Green has demonstrated that macrophages engulfing Bruch's membrane (BM) cause breaks in the BM which allow choroidal neovascularization to set in,

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resulting in the cascade of bleeding and scar formation.[15]

These are just two areas in which ophthalmic pathology has played a key role in the discovery of new modalities of treatment. An inquisitive mind unearths new discoveries which help us understand the evolution and pathogenesis of different eye diseases. Encouraging young physicians to pursue knowledge and equipping them with the right tools for research are as important as developing their clinical acumen in diagnosing eye diseases. We need to encourage the young ophthalmologist to submit ocular specimens to further our quest for knowledge. Vitreous specimens, conjunctival tissues from pterygium excisions, eyeballs from enucleations—they do not get their worth in the waste basket. Now, with the addition of molecular genetics services from the Philippine Genome Center, we have an augmented armamentarium to help us discover new diseases that may be unique to our population and further contribute to the wealth of ophthalmic knowledge.

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