

Mistakes in Interpretation and Malignant Mimics in Cervical Cytology

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Abstract

This review looks at coprocytobiology, which is defined as a combined method of cell preservation, isolation, and cytology that has applications in the study of noninvasive faecal screening for colorectal cancer. Cell isolation has advanced rapidly in the decade since the field was last reviewed, thanks to the development of technologies such as microfluidic and magnetic cell sorting. With the emergence of novel cytological methods and cell preservation strategies, the landscape of cytology has also advanced during this time. Previous reviews present an outdated and incomplete picture of coprocytobiology, summarising only a few early publications, ignoring the principle of cell preservation, and focusing on a single method of isolation rather than the field as a whole. Unlike these publications, this review provides an updated.

Keywords: Coprocytobiology • Cytological • Preservation • Cancer

Introduction

The foundation of effective treatment is an accurate diagnosis of limbal stem cell deficiency (LSCD); however, there is no agreement on the diagnostic criteria for LSCD. To investigate how LSCD was diagnosed prior to surgical intervention, we conducted a systematic literature search of peer-reviewed articles on PubMed, Medline, and Ovid. Clinical presentation, impression cytology, and in vivo confocal microscopy were all used to diagnose LSCD. 26 studies (459 eyes, 11.3%) did not mention the diagnostic criteria among the 131 eligible studies (4054 eyes). In the remaining 105 studies, clinical examination alone was used to diagnose LSCD in 2398 eyes (62.9%), and additional diagnostic tests were used in 1047 (25.8%) eyes. In 981 eyes (24.2%), in vivo confocal cytology was used.

A family of tiny, non-enveloped, icosahedral viruses having double-stranded circular DNA is known as the papillomaviridae. Human papillomaviruses (HPVs) come in over 200 different varieties, according to research. A subset of alphapapillomaviruses (alpha HPVs) was referred to as high-risk (HR) HPV types based on epidemiological research. Anogenital cancer and a subgroup of head and neck malignancies are both caused by HR HPVs. The general population has a high prevalence of cutaneous HPV types, primarily from the beta and gamma genera, on the skin's surface. However, there is mounting evidence linking ultraviolet (UV) exposure and betapapillomaviruses (beta HPVs) to the aetiology of non-melanoma skin cancer (NMSC). [1].

Description

Limbal stem cells (LSCs) are in charge of corneal epithelial cell regeneration as well as the integrity and transparency of the cornea. LSC dysfunction and deficiency result from the destruction of LSCs, the stem cell niche, or both. Limbal stem cell deficiency (LSCD) causes epithelial wound

healing to be delayed, recurrent epithelial erosions, and vision loss. The diagnostic criteria for LSCD are not agreed upon. 67 Photophobia, recurrent episodes of ocular pain, foreign body sensation, tearing, and decreased vision are common ocular symptoms of LSCD and have limited diagnostic value.

Surgical interventions, such as limbal transplantation or keratoprosthesis, can restore vision in eyes with severe LSCD that have failed to respond to medical treatment. Systemic immunosuppression is required for allogeneic LSC transplantation, but it has systemic, potentially life-threatening side effects. As a result, an accurate diagnosis and classification of LSCD are required before selecting an appropriate treatment. We present the results of a systematic review and analysis of peer-reviewed literatures that assessed how LSCD was diagnosed in patients who underwent surgical intervention for the condition. [2].

Pathological status of collected cells can be analysed using various approaches in cytology, such as DNA quantification, identification of cell surface key proteins, presence of pathogens, and, most commonly, cell morphology, which describes the shape and size of cells and their organelles. To highlight specific organelles or parts of the cell, each method requires different cell staining and/or processing, but regardless of the method, the final analysis is usually performed manually under a light microscope (Ivanovic, 2013). Despite the fact that this procedure is performed by highly trained medical professionals, many of the diagnostic criteria are susceptible to human interpretation and bias (Chapman and Otis, 2011). As a result, more recent diagnostic approaches are linked to various diagnostic methods and computer technologies [3,4].

Another scenario that reliable CV methods for cytology could make possible is that of large-scale tele-cytology: personnel in labs in small cities in upstate locations are trained to perform the examination collection, samples staining, and image acquisition through digitizing. These samples are then run through image processing routines to perform the quantitative analyses and feature extractions that can be automated. These CV analyses can be performed either on the cloud or local computers, but the software tools will be able to be operated by local upstate personnel. Later, automatically generated reports from these analyses, together with the original digitized slides, can be uploaded into a telemedicine system, where a specialist can review the images and the quantitative data and provide a final findings report. This method would enable a more distributed, much faster, and less specialist-dependent cytology procedure, concentrating the workforce of experts on providing the final analyses and conclusive findings reports. However, to implement such a scenario, it is necessary to develop more robust CV techniques that account for larger quality variations on sample preparation and image acquisition [5].

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Conclusion

Pathologists who participated in this survey included cytopathologists, surgical pathologists, and pathologists who practised both cytology and surgery. Some pathologists kept personal case databases, while others combed through departmental records. Clinical follow-up was also inconsistent, with some pathologists actively following patients and others relying on clinical databases. Individual pathologists had made the diagnosis of MMIS between 0 and >20 times. Overall, two cases of MMIS as defined by the WHO were found in a database of 4677 specimens and seven cases in a database of 3214 cases. However, these diagnoses were only made in the last 2-4 years, and the databases each spanned roughly 40 years of practise.

This approach, however, is not universally accepted, as evidenced by current clinical guidelines, which state that "effusion cytology for definitive diagnosis of MPM remains a controversial topic and is still generally not recommended." If the effusion cytology is clearly malignant, the diagnosis is strongly suggested, but confirmation by biopsy, if possible, is advised... ' 12 'Do not rely solely on cytology to make a diagnosis of MPM unless biopsy is impossible or unnecessary to determine treatment due to the patient's wishes or poor performance status.

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Conflict of Interest

There are no conflicts of interest by author.

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