

DETECTION OF HUMAN CYTOMEGALOVIRUS IN THE TUMORAL TISSUE OF PATIENTS WITH COLORECTAL CANCER IN ALEXANDRIA.

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Introduction

Human Cytomegalovirus (HCMV), the immensely pertinent beta herpes virus has recently been proposed to be an oncomodulatory virus implicated in the pathogenesis of various tumours including colorectal cancer (CRC).

CRC is the world's thirst most common malignant disease and the second leading cause of mortality. Various factors are proposed to contribute to its pathogenesis including HCMV.

Aim of the Work

Detect the presence of HCMV DNA and Immediate early and early proteins in CRC tissue compared to matched adjacent non neoplastic tissue ANNT.

Correlate the tumoural presence of HCMV with the other clinicopathological features of the disease.

Patients and Methods

PATIENTS: A prospective study was carried out on 50 patients with CRC admitted to the General Surgery Department in Alexandria Main University Hospital during the period from December 2020 to May 2022.

All the patients were subjected to full history taking, radiological and clinical assessment. They signed an informed consent after emphasizing their fulfillment to the inclusion criteria of the study.

METHODS: A pair of pathologically proven tumorous and ANNT was obtained from each patient and subjected to routine histopathological processing.

Molecular detection of HCMV was done by conventional PCR.

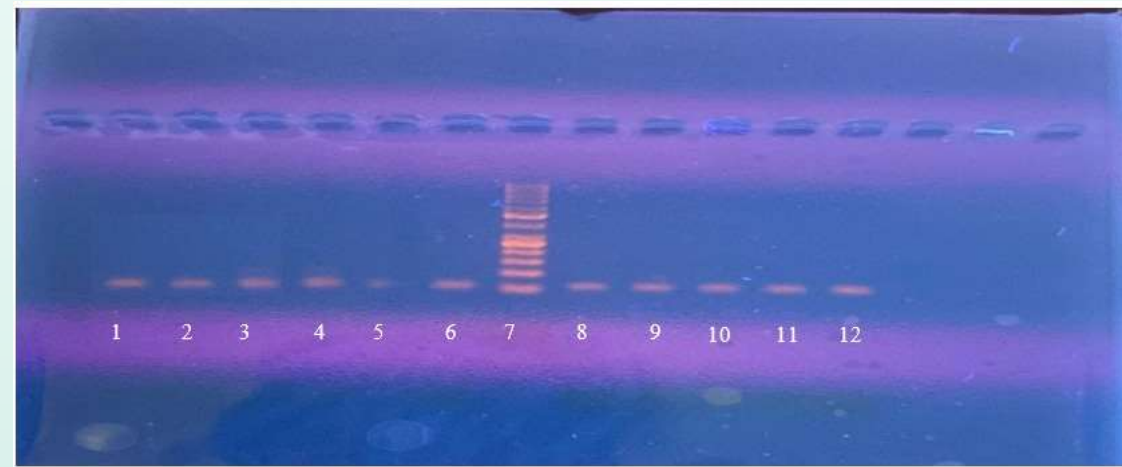
- Two primers were selected from the highly conserved regions of the genome:
- The downstream primer: (3' ACGACCCGTGGTCATCTTTA 5').
- The upstream primer: (5' GCGGTGGTTGCCCAACAGGA 3').

Ab and of 94basepairs (bp) was considered positive for HCMV.

The paired samples were subjected to Immunohistochemistry using monoclonal antibodies: anti-CMV (CH2 and DDG), which contains two antibodies that react specifically with a 76 kDa HCMV early protein and an immediate early DNA binding protein p52.

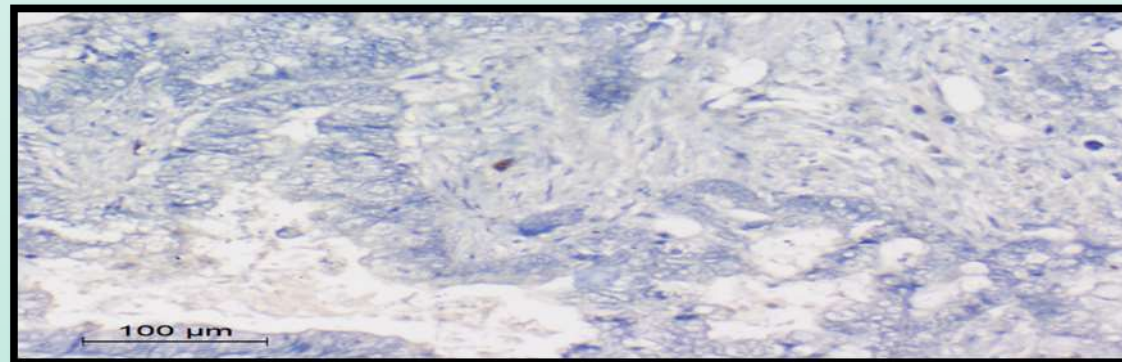
Results

70 % of CRC patients enrolled were females and 36% were elderly (> 60y). Adenocarcinoma was the prevalent histopathological type (92%)



Agarose Gel (2%) stained by ethidium bromide

Lane 7: 50 bp DNA ladder, Lane 8: positive control, Lanes from 1-6, 8-12: positive results (PCR products at 94 bp)



IHC staining showing adenocarcinoma with a positive stain for HCMV antigen (arrow).

Table 1: Descriptive demonstration of Polymerase Chain Reaction and Immunohistochemistry results regarding HCMV detection in paired specimens derived from patients with colorectal cancer.

	PCR (n = 50)			
	Tumour Tissue		ANNT	
	Positive (n = 32)	Negative (n = 18)	Positive (n = 13)	Negative (n = 37)
IHC				
Positive	14	0	7	3
Negative	7	8	6	34
Cannot be assessed	11	10	-	-

Table 2: Agreement between Polymerase Chain Reaction and Immunohistochemistry assays for the detection of Human Cytomegalovirus in tumorous and non-neoplastic specimens derived from colorectal cancer patients

IHC	PCR		Cohen Kappa Coefficient
	HCMV Positive	HCMV Negative	
HCMV Positive	21	3	Kappa =0.572 P<0.001*
HCMV Negative	13	42	

- 1.HCMV was significantly detected in the tumorous versus the ANNT via PCR and IHC.
- 2.A moderate agreement exists between PCR and IHC regarding HCMV detection analyzed via Kappa coefficient analysis.
- 3.HCMV was significantly detected in older age group, higher pathological T stage and tumours with nodalinvolvement.

Conclusion

The detection of HCMV DNA and proteins in CRC tissue at a significantly higher rate compared to ANNT and its association with a higher tumour stage and nodal involvement supports the proposed role of this virus in the pathogenesis of CRC.