



بسم الله الرحمن الرحيم

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Study of Serum Total Immunoglobulin E in Egyptian Patients with Newly Diagnosed Colorectal Carcinoma

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العليم

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List of Abbreviations

Abb.	Full term
AD	Atopic dermatitis
ADCC	Antibody-dependent cell-mediated cytotoxicity
ADCP	Antibody-dependent cell-mediated phagocytosis
AFP	Alpha Fetoprotein
AIO	Arbeitsgemeinschaft Internistische Onkologie
APCs	Antigen-presenting cells
ASC	Adenosquamous Carcinoma
ASRs	Age-standardized incidence rates
bid	Twice a day
CBC	Complete blood count
CCC	Clear Cell Carcinoma
CCE	Colon capsule endoscopy
CC-Type	Cribriform Comedo-Type Carcinoma
CD	Crohn's disease
CI	Confidence interval
CIN	Chromosomal instability
CIRs	Cecal intubation rates
CNVs	Copy number variations
COM	Carcinoma with Osseous Metaplasia
CpG	Cytosine-phospho-guanine
CRC	Colorectal cancer
CRC	Colorectal carcinoma
CS	Colonoscopy
CSU	Chronic spontaneous urticarial
CTC	Computed tomographic colonography
CTLs	Cytotoxic lymphocytes

List of Abbreviations *cont...*

Abb.	Full term
CVID	Common variable immunodeficiency
DC	Dendritic cells
DCBE	Double-contrast barium enema
DFS	Disease-free survival
DN	Dominant negative
DOCK8	Dedicator of cytokinesis 8
DTC	Disseminated tumor cell
EBV	Epstein Bar Virus
ELISA	Enzyme linked immunosorbent assay
FAP	Familial adenomatous polyposis
FCERs	Fc epsilon receptors
FS	Flexible sigmoidoscopy
5-FU.....	Fluorouracil
GBO	Global Cancer Observatory
HepAC	Hepatoid Adenocarcinoma
HIES	Human hyper-IgE syndrome
HIV	Human immunodeficiency virus
HNPCC	Hereditary non-polyposis colon cancer
HRT	Hormone replacement therapy
IBD	Inflammatory bowel disease
iCCC	Intestinal CCC
IgE	Immunoglobulin E
IgGSD	IgG subclass deficiency
IPEX	Immune dysregulation, polyendocrinopathy, enteropathy, X-linked syndrome
IQR	Interquartile range
ITAM	Immuno-tyrosine activation motif
IV	Intravenous

List of Abbreviations *cont...*

Abb.	Full term
KARs	Killer activation receptors
KIRs	Killer inhibitory receptors
LELC	Lymphoepitelioma-Like Carcinoma
LGTGA	Low Grade Tubuloglandular Adenocarcinoma
LOF	Loss of function
LOH	Loss of heterozygosity
LPS	Lipopolysaccharide
LV	Leucovorin
MA	Mucinous (Colloid) Adenocarcinoma
mAbs	Monoclonal antibodies
MAP	MUTYH-associated polyposis
MC	Medullary Carcinoma
MDSCs	Myeloid-derived suppressor cells
MM	IgE Mutiple Myeloma
MMR	Mismatch repair
MPA	Micropapillary Adenocarcinoma
MSI	Microsatellite instability
NK	Natural killer
OS	Overall survival
pChC	Primary Colorectal Choriocarcinoma
PgD2.....	Prostaglandin D2
RhC	Rhabdoid Colorectal Carcinoma
RNS	Reactive nitrogen species
ROS	Reactive oxygen
RV	Rhinovirus
SA	Serrated Adenocarcinoma
SCC	Squamous
SCC	Squamous cell carcinoma

List of Abbreviations *cont...*

Abb.	Full term
SD	Standard deviation
SIgAD	Selective IgA deficiency
SIgED	Selective IgE deficiency
SIgGD	Selective IgG deficiency
SIgMD	Selective IgM deficiency
SIR	Standardized incidence ratio
SPSS	Statistical package for Social Science
SRC	Signet Ring Cell Carcinoma
STAT3	Signal transducer and activator of transcription 3
TAA	Tumor-associated antigens
TAMPs	Tumor-associated molecular patterns
TLS	Tertiary lymphoid structures
TME	Tumour microenvironment
TNF	Tumour necrosis factor
TPO	Thyroperoxidase
Tregs	Regulatory T cells
TSA	Tumor-specific
UC	Ulcerative colitis
Ucs	Undifferentiated carcinomas
VC	Villous Carcinoma

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ABSTRACT

Colorectal carcinoma (CRC) is the third most common non-skin cancer in the United States after lung cancer in both men and women, with an annual incidence of 42.9 per 100,000 people. It accounts for 8% of cancer-related deaths in the US alone (*Bibbins-Domingo et al., 2016*).

Colorectal cancer is the 7th commonest cancer in Egypt, representing 3.47% of male cancers and 3% of female cancers (*Metwally et al., 2018*).

Links between IgE or IgE-mediated diseases and malignancy have been reported with early studies finding decreased cancer risk associated with the presence of allergy and decreased prevalence of atopy in cancer patients (*McCraw et al., 2021*). In cancer patients themselves, there is evidence to suggest that higher IgE levels may correlate to a prolonged survival compared to those with low or even average levels (*Bankova & Barrett, 2019*).

In the current study, that the Best cut off value of total IgE to differentiate between CRC cases and healthy controls was > 42.50 IU/mL with sensitivity=57.1% and Specificity = 53.8%.

In the current study, there was a statistical significance regarding the level of total IgE between CRC cases and controls p value =0.05. Twelve (20%) CRC patients had total IgE level between 5-10 (IU/ml), 37 patients had total IgE level 10-100 (IU/mL), 11 patients with total IgE level >100 (IU/mL). 20 CRC patients were stage II, 19 patients were stage III, 21 patients were stage IV. 54 patients were diagnosed with adenocarcinoma, two patients with Mucinous adenocarcinoma, two patients had Tubulovillous adenocarcinoma, one patient had Villous adenocarcinoma, and one patient had squamous cell carcinoma (SCC). 18 patients had rectal carcinoma, 40 patients had only the Colonic carcinoma, and only two patients had both colorectal carcinoma.

In the current study, that the Best cut off value of total IgE to differentiate between CRC cases and healthy controls was >42.50 IU/mL with sensitivity=57.1% and Specificity = 53.8%.

In the current study, 20 CRC patients were stage II, 19 patients were stage III, 21 patients were stage IV.

Keywords: Serum Total Immunoglobulin E, Colorectal Carcinoma

INTRODUCTION

Colorectal carcinoma (CRC) is the third most common non-skin cancer in the United States after lung cancer and breast cancer in both men and women, with an annual incidence of 42.9 per 100,000 people. It accounts for 8% of cancer-related deaths in the US alone (*Kumar and Lewis, 2021*).

Colorectal cancer is the 7th most common cancer in Egypt, representing 3.47% of male cancers and 3% of female cancers (*Hassan et al., 2021*).

Intriguingly, recent studies reveal a correlation between IgE deficiency and increased malignancy risk (*Ferastraoaru et al., 2020*).

CRC incidence is attributed to dietary factors along with genetic and environmental factors. It also displays a strong correlation with increased age, the maximum rate at the age above 75 years, and lowest below 40 years. Males are affected more than females. African Americans have the highest incidence, and Asian Pacific Islanders have the lowest (*Rahul and Catherine, 2020*).

With the advent of newer and better screening tools, CRC related mortality rate has decreased, on average, about 2.7% between 2004 and 2013. It is expected to decrease further to about 38% for 50 to 74-year-olds and about 45% for those older than 75-years-old by 2030 (*Rahul and Catherine, 2020*).