Evaluation of pancreatic cyst prostaglandin E2 as a Marker for Differentiation between Mucinous and Non Mucinous Cysts and Prediction of Dysplasia in Mucinous Pancreatic Cysts

Thesis

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تقييم البروستاجلاندين ج٢ كعلامة للتميز بين الاكياس البنكرياسية المخاطية وغير المخاطية والتنبؤ بخلل التكيسات البنكرياسية المخاطية

رسالة

توطئة للحصول علي درجة الماجستير في الأمراض الباطنة

مقدمة من

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Contents

LIST OF ABBREVIATIONS

5-HETE	: 5-Hydroxoy eicosatetraenic
5-HPETE	: 5- hydroperoxy icosatatraenic
5-HTP	: 5- Hydroxytryptophan
ACC	: Adenocarcinoma with cystic lesions
ALOX 15	: Arachidonate 15- lipoxygenase
BD-IPMN	: Branch duct- Intrapapillary mucinous neoplasia
BLT1	: Leukotreine receptor
CA 19-9	: Carbohydrate antigen 19-9
CEA	: Carcinoembryonic antigen
CH-EUS	: Contrast-enhanced harmonic endoscopic ultrasound
COX	: Cycloxygenase
CPEN	: Cystic pancreatic endocrine neoplasia
CYSLT 1	: Cysteinyl leukotriene
CYSLTR 1	: Cysteinyl leukotriene receptor 1
EFSUMB	: Europeon federation of societies of uktrasound in medicine and biology
ERC	: Endoscopic Retrograde cholangiography
ERCP	: Endoscopic Retrogradecholangiopancreatography
EUS	: Endoscopic Ultrasound
EUS –FNA	: Endscopic Ultrasound – Fine needle aspiration
EUS-E	: Endoscopic Ultrasound –Elastography
GPCR	: G Protein coupled receptor
IPMN	: Intrapapillary mucinous neoplasia
L-DOPA	: Dihydroxyphenylalanine
LOX	: lipoxygenase
LTA4	: Leukotrein A4
LTB4	: Leulotrein B4
LTC4	: Leukotrein C4
LTD4	: Leukotrein D4
LTE4	: Leukotrein E4
LXA4	: Lipoxin A4
LXB4	: Lipoxin B4
MCN	: Mucinous cystic neoplasia
MDCT	: Multidetector computed tomography

MD-IPMN	:	Main duct intrapapillary mucinous neoplasia
MPD	:	Main pancreatic duct
MRCP	:	Magnetic resonance cholangiopancreatography
nCLE	:	Needle- Based confocal laser endomicroscopy
PAF	:	Palatelet activating factor
PET	:	Positron Emission Tomography
PG G2	:	Prostaglandin G2
PG H2	:	Prostaglandin H2
PGD_2	:	Prostaglandin D 2
PGE_1	:	Prostaglandin E 1
PGE_2	:	Prostaglandin E 2
$PGF_{2\alpha}$	:	Prostaglandin F2a
PGI_2	:	Prostaglandin I2
PGS	:	Prostaglandin Synthetase
PIP2	:	Phosphoinositol biphosphate
PKC	:	protein kinase C
PLA2	:	Phospholipase A2
PsC	:	Pancreatic Pseudocyst
PTGER 2	:	PTGER 2 Gene
PTGER 3	:	PTGER 3 Gene
PTGER 4	:	PTGER 4 Gene
PTGS 1	:	Post-transcriptional Gene silencing 1
PTGS 2	:	Post-transcriptional Gene silencing 2
SCN	:	Serous Cystic Neoplasia
SD	:	Standard Deviation
SPEN	:	Solid and pseudopapillary epithelial neoplasia
TXA 2	:	Thromboxane A 2
TXA1	:	Thromboxane A1
TXB 2	:	Thromboxane B2
VHL	:	Von Hippel lindangue gene

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ABSTRACT

Background: There are different types of pancreatic cysts. They can be classified by different ways. Each of them has different plan of management. That is why their differentiation became mandatory before setting their treatment plans.

Aim of the study: To Evaluate PGE2 as a marker of differentiation of mucin containing pancreatic cysts and prediction of dysplasia in these cysts.

A Secondary aim is differentiation of mucin from non mucin containing pancreatic cystic lesions

Patients and Methods: 40 patients were recruited from The Endoscopy unit of Internal Medicine Department of Cairo University hospital in the period between December 2018 and August 2019. A comparative cohort study design was adopted.

Results: In our study, there were a significant differences in PGE2 level between true and inflammatory pancreatic cysts (p=0.001) .However, there were insignificant differences between mucinous , non mucinous (p=0.406). There were insignificant differences between different grades of IPMN dysplasia (p=0.615)

Conclusion: Prostaglandin E2 is pancreatic cystic fluid marker which can be used for differentiation between true pancreatic cysts from inflammatory pancreatic cysts which have different plans of management . Prostaglandin E2 is not good marker to be used for differentiation between different grades of IPMN dysplasia.
Keywords: prostaglandin E2 , intrapapillary mucinous neoplasia , serous cystic neoplasia and mucinous cystic neoplasia.

INTRODUCTION

Many kinds of cysts can grow in the pancreas. These cysts can be classified according to morphology, constituent or malignant tendency. According to constituent, pancreatic cystic lesions is divided into mucin containing cystic lesions and non mucin containing cystic lesions.

The mucin containing lesions is subdivided into mucinous cystic lesions and intra ductal papillary mucinous neoplasm. The non mucin containing cystic lesions is subdivided into pseudocyst and serous cystadenoma **(*Michael et al., 2004).***

Intraductal papillary mucinous neoplasm (IPMN) is cystic lesion connected with the pancreatic duct and their fluid usually has a large amount of digestive pancreatic enzymes. The cysts can occur in both men and women and are more common in people older than 50 years. IPMNs are further classified into subtypes based on the presence or absence of dilation of the main pancreatic duct. Cysts that are small, stable in size, and without worrisome features have a low risk of developing into cancers. Worrisome features are defined as a cyst larger than 3 cm, a thick cyst wall or one that "lights up" with contrast when a CT scan is done, size of the main duct of the pancreas measuring 5 to 9 mm, or a sudden change in the diameter of the pancreas' main duct ***(Kristine et al., 2011).***

Another kind of mucinous cyst is called mucinous cystic neoplasm. Less common than IPMNs. Mucinous cystic neoplasms are almost exclusively found in middle-aged women and are usually located in the body and tail of the pancreas. These cysts also potentially can become cancerous.

A third type of cyst is the serous cystadenoma. These cysts have little to no risk of becoming cancerous. They are found more commonly in women older than 50 years ***(Masao et al., 2013).***

Another kind of cyst is called a solid pseudopapillary neoplasm. These rare neoplasms have both solid and cystic components. Solid pseudopapillary neoplasms may also become cancerous and are more commonly found in younger women.

Pancreatic ductal adenocarcinoma, the most common form of pancreas cancer, can look cystic in some cases. Pancreatic neuroendocrine tumors, another type of pancreas cancer, can also occasionally appear cystic and be confused with a benign cyst ***(Paulo et al., 2016).***

Mucin containing cystic lesions are radiographically detectable and may often be differentiated by optimal imaging (magnetic resonance pancreatography, computed tomography) or endoscopy (Endoscopic Ultrasound or Endoscopic Retrograde Pancreatography). Sometimes, pancreatic fluid analysis for amylase may suggest the