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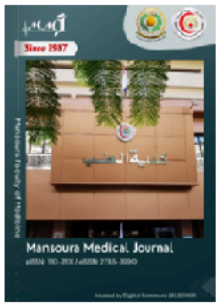

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ROLE OF CYSTIC DUCT IN GALL STONE DISEASE Clinico Pathological Correlation

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Clinico Pathological Correlation

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INTRODUCTION

The cystic duct is not merely a passive conduct between the gall bladder and the common bile duct, but may play an active role in the flow of bile into and out of the gall bladder (Scott and Otto, 1979). Histologically an anatomically prominent sphincter, does not appear to be present, however, a thin layer of smooth muscle is evident in the wall of the duct, and, along with the prominent mucosal folds which make up the valves of Heister, the cystic duct may act as a variable resistor to flow (Blumgart, 1988). Studies in the dog gall stone model have shown that cystic duct resistance to flow increases prior to gall stone formation in these animals, These studies suggest that abnormalities in cystic duct function may be implicatea in the pathophysiology of gall stone formation (Pitt et al., 1981).

The aim of the work is to study the histopathology of the cystic duct in patients having gall stones.

PATIENTS AND METHODS

Fifty patients having gall stones (35 females and 15 males) were admitted at Mansoura University Hospital and constituted the material of this study. Their ages ranged from 35 to 52 years (average 46 years). The presence of gall stones was proved by ultrasonography and /or cholecystography. Intravenous cholangiography was done in

doughtful cases of common bile duct stones, All patienta were investigated for liver functions, blood picture, blood sugar, serum creatinine before the operation of cholecystectomy, Common bile duct exploration was indicated in 4 patients (8%). During cholecystectomy, efforts were done to preserve a good length of the cystic duct removed with the gall bladder uncrushed. The type, number and size of the gall stones were recorded as well as the radiological size of the gall bladder. The cystic duct and the gall bladder were subjected to histopathological study after fixation of then specimen in 10% formalin then processed as paraffin and cut at 4 thickness then stained for routine H. & E. together with Masson's trichrome for differentiation between fibrous and musole tissue,

RESULTS

The reSults were shown in tables 1 - 3 and FigureS (1-3).

DISCUSSION

The human cystic duct has normally an extremely thin layer of muscle deep to the mucosa surrounded by a dense layer of collagen fibres (Scott et al., 1979). The presence of this muscle fibre are capable of sphincter - like activity. The resistance to flow of bile were the same in either direction through the duct, an indication that the prominent mucosal folds (Valves of Heister) did not function as unidirectional valves (Torsoli et al., 1970). The cystic duct being a narrow canal. So any mild inflammation and or fibrosis may result in dysfunction of the duct.

In this study, the cystic, duct was narrowed and distorted in 68% of cases, showed, histologic evidence of inflammatory infiltrate and fibrosis within the mucosa in 64% (table 3). The incidence of both inflammatory infiltrate and narrowing with distortion of the lumen is nearly the same. The inflammatory reaction of the mucosa may be the cause of such narrowing, The gall bladder showed mucosal inflammatory changes & fibrosis in about 80% of cases (table 2).

There is another point, whether inflammatory processes started in cystic

duct or in gall bladder or simultaneously, this needs further investigations.

Pitt et al., (1981) mentioned on experimental model that cystic duct dysfunction started before gall stone formation. However in our material, gall bladder, show also inflammatory changes in more than 80% of cases and especially associated with mixed stones. Also the role played by cystic duct and gall bladder in the pathogenosis of gall, stone formation is completely different, yet both may be synergetic.

From this work, it was found presence of valve Heister in minority of cases (30%). The remaining ones showed absence of the valve, This may be explained due to distortion 2ry to inflammatory process in the cystic duct. However, this point needs further investigation on both experimental models and in P. M. cases.

The significance of presence hypertrophied nerve fibres seen in surgical specimens from aganglionic segment Of the gut is obscoure (Gherardi, 1960). Their presence Within the cystic duct may indicate a sign of resistence and needs further work to explain their excistence. Also, presence of hyperplastic mucous secreting glands within the wall of cystic duct as in cases of gall bladder adenomyosis (Ascoff's sinuses) associated with cholecystitis.

It is concluded from this work that the cystic duct shares the same inflammatory changes as the gall bladder changes associated with gall stones.

It is recommended to examine the cystic duct together with gall bladder in P. M. cases without gall bladder or biliary disease to see any pathological abnormality, also an experimental model is essential to study both physiological as well as pathological changes with lithogenic diet.

SUMMARY

Fifty cases with gall stones were included in this study, 35 females and 15 males with mean age 46 years.

The presence of gall stones was proved by ultrasonography and or cholecystography. All patients were investigated for liver functions, blood picture blood sugar and serum creatinine before the operation.

Exploration of common bile duct was done in 4 cases, Cholesterol stone was found in 6 cases, pigment stones in 14 and the remaining (30) with mixed (infected) stones. The cyatic duct and gall bladder were examined grossly and histologically. The cystic duct was narrowed in 68% of cases and shared more or less the same inflammatory changes and its sequele as in the gall bladder associated with gall stones.

Also, it is recommended to examine the cystic duct in any gall bladder specimen. The cystic duct plays an active role in the flow of bile into and out of the gall bladder. So its pathological changes may share in the pathogenosis of gall stones even in abscence of inflammatory process in the gall bladder.

Table I : Age, Sex, Type of gall stones, size of gall bladder and associated common bile duct stones in 50 patients having gall stone disease.

Type of gall stones	Sex		Mean	Patients		Size of the gall bladder						Associated CI Stones	
						Normal		enlarged		shrunken			
	♀	♂	Age	No	%	No	%	No	%	No	%	No	%
Solitory Cholesteral	3	3	41	6	12	4	8	2	4	0	0	0	0
Multiple pigment	10	4	52	14	28	6	12	5	10	3	6	1	2
Multiple Mixed	22	8	46	30	60	8	16	9	18	13	26	3	6
Total	35	15	46	50	100	18	36	16	32	16	32	4	8

Table 2 : Histopathology of the gall bladder in 50 patients having gall stones.

Gall Bladder	Cholestrol		Pigment		Mixed		Total	
	No	%	No	%	No	%	No	%
Mucosa :								
Inflamm. infiltrate	5	10	3	6	22	44	30	60
Normal	0	0	6	12	3	6	9	18
Fibrosed	1	2	5	10	5	10	11	22
Submucosa :								
Inflamm. infiltrate	5	10	8	16	26	52	39	78
Fibrosed	1	2	6	12	4	8	11	22
Muscle :								
Hypertrophy	5	10	5	10	16	32	26	52
Fibrosed	1	2	3	6	5	10	9	18
Aschoffsinus	0	0	6	12	9	18	15	30
Serosa :								
Inflamm infiltrate	5	10	5	10	14	28	24	48
Fibrosis	1	2	9	18	16	32	26	52

Table 3 : Histopathology of the cystic duct in 50 patients having gall stones.

Cystic Duct	Cholestrol		Pigment		Mixed		Total	
	No	%	No	%	No	%	No	%
Cystic Duct :								
. Lumen :								
Narrowed	3	6	8	16	23	46	34	68
Normal	3	6	6	12	7	14	16	32
Mucosa :								
Normal	4	8	8	16	6	12	18	36
Inflamm. infiltrate	1	2	3	6	18	36	22	44
Fibrosed	1	2	3	6	6	12	10	20
Valves :								
Present	4	8	5	10	6	12	15	30
Abscent	2	4	9	18	24	48	35	70
Muscle Layer :								
Hypertrophy	2	4	4	8	8	16	14	28
Mucous glands	1	2	1	2	2	4	4	8
Fibrosed with nerve fibre - hypertrophy	3	6	9	18	20	40	32	64
Serosa :								
Fibrosed	2	4	7	14	12	24	21	42
Inflamm infiltrate	4	8	7	14	18	26	29	58

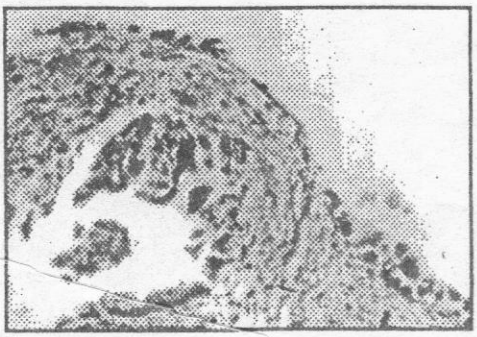

Fig. 1 : Revealed prominent valve of Hister with marked inflammatory infiltrate in its wall with erosion of surface mucosa in case of mixed gall bladder stone "H X and E X 100".

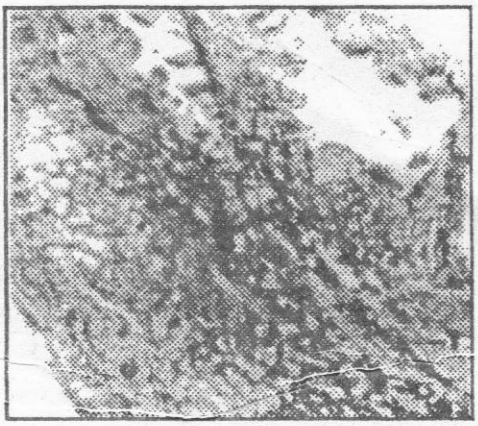

Fig. 3 : Revealed marked hyperplasia of mucous secreting glands with presence of valve of Hister and marked fibrosis of serosa in case of pigment gall stone "H X and E X 100".

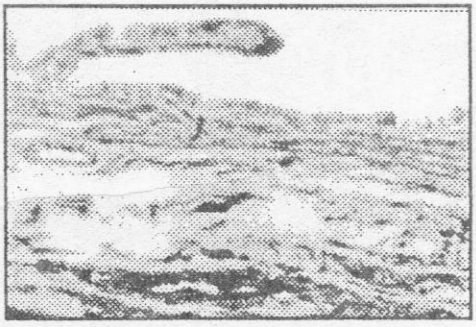

Fig. 2 : Revealed presence of valve of Hister that are lined by simple mucous secreting epithelium with minor inflammatory infiltrate and marked nerve fibre hypertrophy with fibrosed serosa in case of cholesterol gall stone "H X and E X 100".

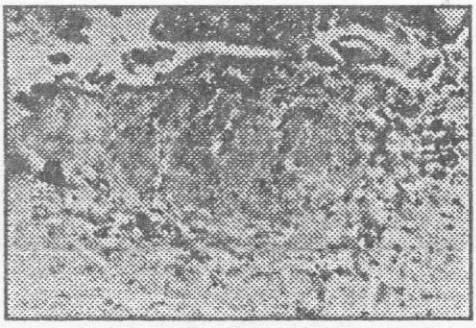

Fig. 4 : Showed nearly abscence of valve of Heister with marked hypertrophy of muscle fibres with scarce inflammatory infiltrate in the submucosa in case of mixed gall stone "H X and E X 100".

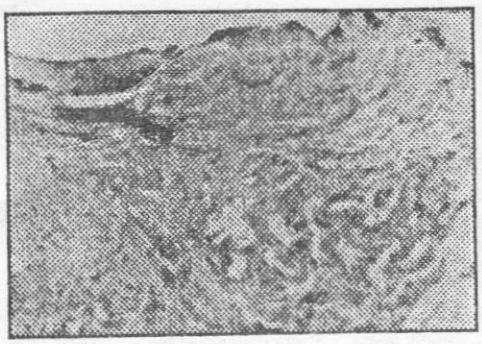

Fig. 5 : Revealed comlete abscence of valve with marked fibrosis of the wall and scarce secreting glands in case of cholesterol gall stone "H X and E X 100".

Fig. 6 : Showed marked hypertrophy of nerve fibres with fibrosis and scarce inflammatory infiltrate in case of pigment gall stone "H X and E X 100".

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بسم الله الرحمن الرحيم

دور قناة الحويصله المرارية فى تكوين حصوات المراره
(دراسة اكلينيكية باثولوچية)

تمت هذه الدراسة على خمسين حالة من حالات حصوات المرارة منها ٣٥ حالة انثى، ١٥ حالة من الذكور وكان متوسط العمر ٤٦ عام.

وقد تم التأكد من وجود حصوات المرارة باستخدام الأشعة فوق الصوتية وصبغات المرارة كما تم عمل وظائف كبد وصورة دم ونسبة سكر ونسبة كرياتنين لجميع الحالات قبل اجراء الجراحة.

وقد تم استكشاف القناه المرارية الأساسية فى ٤ حالات وقد وجد ٦ حالات بها حصوات كلوسترولیه، ١٤ حالة بها حصوات ملونه، ٣٠ حالة بها حصوات خليطية. وقد تم فحص المراره والقناه الحويصلية بالعين المجردة وبالميكرسكوب ووجد فى ٦٨٪ من الحالات ضيق القناه الحويصلية كما أن بها نفس العمليات الالتهابية ونفس التغيرات التى توجد فى الحويصله المرارية الموجود بها الحصوات.

ولهذا ننصح بفحص القناه المرارية الحويصلية لأنها تلعب دور هام فى سريان العصاره الصفراوية داخل وخارج الحويصله المرارية. ولهذا فإن التغيرات الباثولوچية فى القناه الحويصلية لها دور فى تكوين حصوات المراره حتى فى غياب الالتهابات فى الحويصله المرارية.