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ELECTROCARDIOGRAPHIC CHANGES DURING BILIARY TRACT SURGERY IN PATIENTS UNDERGOING OPEN CHOLECYSTECTOMY UNDER SPINAL ANESTHESIA

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ABSTRACT

Introduction- Many non-cardiac conditions that have been reported to mimic ischemic heart disease both clinically and with ECG changes, such as cholecystitis, pancreatitis, and pneumonits. There can be different ECG changes such as non –specific T –wave inversion or ST segment depression. Awareness of these different changes is crucial for appropriate diagnosis and to avoid unnecessary investigations and may lead to inappropriate cardiac management and delay in surgery

Aim and objective - To evaluate the cholecysto- cardiac link in biliary tract disease, to observe the ECG changes in per-operative & postoperative phase.

Material and Method- A hospital based prospective observational study was conducted in A.K.Tibbiya College & Hospital over a period of one year. 50 patients with symptomatic gall bladder disease were

included in the study. All patients underwent open cholecystectomy. Pre and post – operative ECG and changes while holding Gall bladder neck were observed.

Result- Out of 50 patients of ECG changes in the pre operative period 24 had sinus tachycardia, 7 had Sinus Bradycardia, and 15 had T wave inversion /flattening i.e. having ischemic changes (5 inferior wall, 3 anteroinferior wall, 5 anterior, one inferolateral wall and one anterolateral wall ischemia). One patient had arrhythmia, one had Ectopics and one had LPFB, one had counter clockwise rotation Among 50 patients 19 had sinus tachycardia, 7 patients had Bradycardia, T wave inversion in 6 patient, ST segment elevation in 5 patient & 2 patients had ectopics pre-operatively. During Intraoperative period, at the time of holding gall bladder neck 29 patients developed badycardia, 6 patients had T wave inversion & 5 had ST segment Elevation. After removal of Gall Bladder only 3 patients remains with sinus bradycardia, 4 with T wave inversion and only 1patient had Ectopics. After 3 month only one patient had T wave inversion.

Conclusion- All the patients with non-specific ECG changes and T wave inversion are not necessarily case of cardiac disease. Most of these ECG changes either disappeared or remain static in the post operative period without consequent cardiac complications; which reflects that not all ECG changes are clinically significant.

Key words: Cholecystectomy; Spinal Anasthesia; ECG Changes;

INTRODUCTION

The association of biliary tract and coronary artery disease has been noted clinically for years by Babock [1] in 1909. There have been repeated references to reflexes arising from upper abdominal viscera and specially the billiary tract that could give rise to Cardiac arrhythmia, a reduction in coronary blood flow and even the cardiac castastrophe during the surgery of biliary tract.[2] Orloff et.al., [3] suggested that arrhythmias during Cholecystectomy can explained in terms of autonomic nervous system imbalances, pulse and heart rate, ECG monitoring tells about the alternation in the rate and rhythm of cardiac contraction . Ischemic ECG changes have been observed in patient with gallbladder disease with underlying cardiac problem, such changes some time leads to unnecessary investigation and delay in surgery. Some time these changes disappeared postoperatively. Different nin cardiac conditions have been reported to mimic ischemic heart disease. such as cholecytitis,[4-8] pancreatitis,[9] and pneumonitis [10.]

MATERIAL AND METHODS

A hospital based prospective observational study was conducted in A.K.T.C & hospital over a period of one year. 50 patients with symptomatic gall bladder disease of either sex and age between 18 to 60 years, ASA I & II were included in this study.

Exclusion Criteria

- Known cardiac patient with unstable angina & MI.
- History of chest pain with ECG changes
- Life threatening Arrythmia.
- Patient with heart block.
- Patient refusal for spinal anesthesia.

Acute cholecystitis was diagnosed by imaging modalities that were performed owing to suspected accompanying clinical symptoms such as fever, abdominal pain associated with nausea and vomiting. All the patients were operated under spinal anesthesia. PAC was done a days before surgery and Tablet Alperazolam 0.5 mg was given to all patients night before surgery. On the day of surgery intravenous line has been secured and preloading was done with 500- 1000 ml of Ringer lactate. All the essential monitors were placed including $Sp0_2$, BP cuff, ECG. Spinal was performed in sitting position and Lumber puncture was done at L3-L4 level, 3.5 ml of heavy Bupivacaine was given by 25 G Quincke needle and put the patient in supine position. Blood pressure, heart rate, duration of sleep and ECG were recorded 2 days before operation.

During Intraoperative period pulse rate, heart rate, and ECG monitoring done continuously with special attention at following times.

- Before induction of anesthesia
- After induction of anesthesia
- At the time of holding of neck/fundus of gall bladder
- When the gall bladder is out
- CBD Exploration
- Closure of skin.

During post operative period continuous monitoring was done up to 90 minutes, then every 6 hourly for 6 postoperative days. Patient was discharged on 6th post-operative day and follow up done fortnightly up to 3 months.

STATISTICAL ANALYSIS

Demographic data were analyzed using student-t test, Quantitative data displayed as Mean ± SD, Qualitative data exhibited as frequency and percentage.

OBSERVATION AND RESULTS

Table 1 Dermographic data

Age (yrs) Mean ± SD	Weight (Kg)	Sex		Height (cms)	ASA		Duration of surgery (min)
		M	F		I	II	
46.67±9.57	62.30 ± 14.3	14	36	153 ± 2.4	31	19	42.5 ± 10.60

Table 2 Intraoperative ECG finding

Time	Normal	Sinus tachycardia	Sinus bradycardia	T wave inversion	ST segment elevation	Ectopics	Arrythmia	RBBB/ LBBB
Before sp	13	19 (38%)	7 (14%)	6(12%)	5(10%)	2 (4%)	0	3
After sp	8	9(18%)	17(34%)	6(12%)	5(10%)	2 (4%)	0	3

At neck of GB	5		29(58%)	6(12%)	5(10%)	2(4%)	0	3
GB out	33		3(6%)	6(12%)	5(10%)	0	0	3
Closure skin	34		3(6%)	4(8%)	5(10%)	1(2%)	0	3

Table 3 Post operative ECG findings

Time	Sinus tachycardia	Sinus Bradycardia	T wave inversion	St segment elevation	Ectopics	Arrythmias	RBBB/ LBBB
Immediate post operative	11	3	4(8%)	2(4%)	2	0	3
After 1 week	5	3	4(8%)	0	0	0	3
After 3 month	2	1	1(2%)	0	0	0	3

Pre-operatively out of 50 patients, 19 had sinus tachycardia, at OT table ,before induction, we had given injection Medazolam to 5 patients and rest of them get normal after some time by itself.

At the time of holding of gallbladder neck 29 patients developed sinus bradycardia, T wave inversion/flatting was developed in 6 patients, ST segment elevation was developed in 5 patients and Ectopics in only 2 patients. Only one patient underwent CBD exploration and had normal ECG.

After closure of skin ECG changes improved and 34 had normal ECG. Out of 6 only 4 have persistent T wave inversion /flatting, 3 have persistent bardycardia & 5 had ST segment elevation.

After 3 months, 2 patients remained with sinus tachycardia, 1 with sinus bradycardia & 1 had t wave inversion and none of them had Ectopics.

DISCUSSION

The importance of ischemic ECG changes including ST segment elevation , ST segment depression or T wave inversion that indicate myocardial ischemia are well established and requires appropriate investigation and treatment .The reason for the ECG changes may be due to the irritation of the surrounding caused by inflamed gallbladder , which leads to creation of reflex autonomic stimuli that will restrict the coronary blood supply.[3-6] In some abdominal diseases such as cholesistitis,[4-8] pancreatitis,[9] pneumonitis[10] may mimic angina pain. Gastric distention and acute cholecystitis may lead to chest pain and ECG changes and hence are not differentiated clinically from cardiac ischemia.[11] Understanding and differentiation of such disease will improve the diagnosis, and avoid wastage of time and money and patient stress.

In our study, 50 patient with preoperative ECG changes, 19 (38%) had sinus tachychardia , T wave inversion was present in 6 (12%) patients , sinus bradycardia in 5 (10%), Ectopics in 2 (4%) and left bundle Branch

block in 3 (6%) patients. Ischemic changes were found in 22 % patients. Inflammation of hepatobiliary system may produces some ECG changes e.g. non- specific ST-T wave changes.

Intra-operatively In our study, bradycardia occurred in 29(58%), at the time of holding gallbladder ST segment elevation was present in 5 (10%) patients, Ectopics were found 2 (4%) patients and LBBB in 3 (6%).

In immediate Post operative period, 3 (6%) patients had sinus bradycardia , 4 (8%) had T wave inversion

After 3 months, 2 patients remained with sinus tachycardia, 1 with sinus bradycardia & 1 had T- wave inversion and none of them had Ectopics.

Our result are in agreement with the previous studies of Khair et.al,[12] Fitz Hugh et.al.,[13] They observed ECG changes in patients with cholecystitis which get completely resolved after cholecystectomy.

Nasir Durning et.al.,[14] found improvement in ECG changes after antibiotic treatment for choleycystitis , similarly Aksay E et.al.,[15] found that ECG changes revert back to normal after 3 days of discharge on its own .

Tori M. Usheima et.al.,[16] found changes in ECG in patient in immediate post operative period which get resolved after one month .

Patel N et al.,[17] reported a case of 34 year female with ST segment elevation with cholecystitis, with no history of past cardiac disease, as the youngest reported case in literature .

Shah U. Mehta K. et.al.[18] have concluded that the prevalence of non-specific ST-T wave abnormalities among patients coming from general abdominal surgeries was almost 40.4%. These changes are more among elderly and smokers.

Soric M & Miletic W et. al. [19] reported a case of 24 year old male with acute cholecystitis , his ECG revealed complete arterio-ventricular block with ventricular frequency of 60/min, after cholecystectomy patient revert back to sinus rhythm , it was postulated that this patient had a case of cardio -biliary reflex .

Bradycardia in acute cholecystitis ,also known as Cope,s sign[20] has been observed in several cases. In our study 29 patients (58%) have sinus bradycardia , the suspected etiology is excessive vagal stimulation .

Panteleimon E et.al.,[20] reported Cope's sign and complete heart block in a 78 year old patient with biliary colic, he found that biliary colic can cause severe reversible bradycardia, even complete heart block. He concluded that pain relief is very important in the management of such cases. similarly Franzen D & Jung S et.al.[21] reported a case of 48 year old male with acute cholecystitis , his telemetric ECG revealed complete atreriovetricular block (AV Block), they concluded that acute cholecytitis is a treatable cause of newly diagnosed AV block , immediate cholecystectomy should not be deferred .

CONCLUSION

Ischemic and non ischemic ECG changes were detected in patients with symptomatic gall bladder disease with no history of gall bladder disease. Most of the changes either disappear after removal of gall bladder. This study concluded that all ECG changes do not indicate, necessarily cardiac problem careful physical examination as well as routine laboratory test of the hepatobiliary system may be helpful to avoid unnecessarily cardiac interventions .

REFERENCES

1. Babcock RH. Chronic cholecystitis as a cause of myocardial incompetence. *JAMA*. 1909;52:1904–1911
2. Seltzer , J. L et al (1985); the hemodynamic response to traction on the abdominal mesentery , 63;96 -9
3. Clarice NE. Electrocardiograph changes in active duodenal and gall bladder disease. *Am Heart J*. 1945;29:628–632
4. Doorey AJ, Miller RE. Get a surgeon, hold the cardiologist: electrocardiogram falsely suggestive of myocardial infarction in acute cholecystitis. *Del Med J*. 2001;73:103–104
5. Nasir JM. Chest pain and ST segment elevation attributable to cholecystitis: a case report and review of the literature. *Mil Med*. 2006;171(12):1255–1258
6. Cohen OJ. Electrocardiographic ST-segment elevation in cholecystitis. *Hosp Physician*. 1991;27:15–18
7. Kaufman JM, Lubera R. Preoperative use of atropine and electrocardiographic changes. *JAMA*. 1967;200:109–112
8. Ravdin IS, Fitz-hugh T, Wolferth CC, Barbiert EA, Ravdin RG. Relation of gallstone disease to angina pectoris. *Arch Surg*. 1955;70:333–342
9. Krasna MJ, Flancbaum L. Electrocardlographic changes in cardiac patients with acute gallbladder disease. *Am Surg*. 1986;52:541–543
10. Breitwiesser ER. Electrocardlographlc observation in chronic cholecystitis before and after surgery. *Am J Med Sci*. 1947;213:598–602
11. Welss MW, Hamilton JE. The effect of gall-bladder disease on the electrocardiogram. *Surgery*. 1939;1:893
12. Randa Z.A. Khair ,Mohamed T.M.M. Ibrahim and Numan M.A . Malik (2014) Improvement of ECG changes in patients with cholelithiasis After cholecystectomy . International Journal of science , Environment and technology .Vol 3, NO 3, 1076 -1082.

13. Fitz –Hugh T, Wolferth C . C (1935) :Cardiac Imporvment Following GallBladder Surgery Elctrocardiographic Evidence in cases of Associated myocardial disease . Ann.Surg , 101:478 .

14. Nasir J.M During S.T. Sweet J.M Cation L.J.(2006): Cholecystitis :A Case report and Review of the Literature .Redorbit .

15 . Askay , E et al (2010) : Acute coronary syndrome mimicked by acute cholecyctitis . Emergency medicine Australia 22, 343-346

16 Tori M ,Ueshima S , Nakahara M, (2008) : A case of Takotsubo Cardiomyopathy after surgery of Common Bile Duct Stones , case report Gastroenterology ; 2:91-95

17. Patel J, Movahed A, Reeves WC. Electrocardiographic and segmental wall motion abnormalities in pancreatitis mimicking myocardlal infarction. *Clin Cardiol*. 1994;17:505

18. Shah U, Mheta .K Veeraraghavan V, and Shah B .(2017); prevalence of surgeries for acute abdomen . international journal of medical science and Clinical Inventions 4(1):2534-2537

20 . Panteleimon E Papakonstantinou etal . A case report of Cope sign and comlete heart block in 78 year old patient with biliary colic ;2018 march .

19 O Reilly M.V, Krauthamer MJ “cope sign ‘ and reflex Bradycardia in two patients with cholecystitis . Br Med J 1971; 2 (5754):146 .

21. Franzen D , Jung S , Fatio R etal 2009 ; Copmlete AV block in patient with acute cholecytitis . European Journal of emergency medicine , 16(6):346-347