Section A-Research paper
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CHLAMYDIA PNEUMONIA AND ITS ASSOCIATION WITH MYCOPLASMA INFECTION IN CARDIOVASCULAR DISEASE

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Abstract

Relationship of atherosclerosis and coronary course sickness notable principal pathophysiologic reason for Ischemic Heart Illnesses and Myocardial Dead tissue and because of significant gamble factors, for example, high plasma level of low thickness lipoprotein, low plasma level of high thickness lipoprotein, cigarette smoking, hypertension and diabetes mellitus, contamination with few irresistible specialists, for example, *Mycoplasma pneumoniae* that could related with atherosclerosis consider as another gamble factor for ischemic heart infections. Point of this study is to research the job of this creature and its relationship to the gamble of openness to Mycoplasma pneumonia contamination for ischemic heart illnesses in Indian populace. This was a case-control concentrate on in which 96 patients considered and they were in two gatherings: The first group, also known as the case group, consisted of 48 units of patients who had been admitted to the hospital with a diagnosis of ischemic heart disease, such as unstable angina and myocardial infarction (STEMI, NSTEMI). The second group, also known as the control group, consisted of 48 units of healthy patients who did not have a history of ischemic heart disease that could be changed, and their age index was comparable to that of the first group. The ELISA method was used to test for IgG antibodies against *Mycoplasma pneumoniae* in both groups. 15 cases out of 48 in the case group and 3 out of 48 in the control group tested positive for antimycoplasma antibody in both groups. There was critical measurement distinction in antimycoplasma immune response level. The estimated relative risk of mycoplasma infection for ischemic heart disease is five in each group ($p = 0.004$). It appears to be that *Mycoplasm pneumoniae* contamination is a gamble factor for Ischemic Coronary illness, in Indian populace. This is the primary report investigation of such an illness in India. To better understand the interactions

between the risk of *Mycoplasma pneumoniae* and *Chlamydia pneumoniae* infections and conventional risk factors for ischemic heart disease in this country, additional research is necessary.

Keywords: *Chlamydia pneumoniae*, coronary heart disease, mycoplasma, atherosclerosis, ELISA, PCR.

1. Introduction

Coronary Heart Disease (CHD) has been related with huge dreariness and mortality around the world. Diet, smoking, hypercholesterolemia, hypertension, diabetes, and sedentary lifestyles are among the well-known risk factors (Alviar et al., 2011). Plaques build up inside the arteries, preventing oxygen-rich blood from reaching various parts of the body and causing atherosclerosis. In 1978 (Fabricant et al.), the connection between infectious agents and atherosclerosis was first demonstrated. Numerous common bacteria and viruses have been hypothesized to play a role in the inflammation of the vascular heart wall and the development of atheroma during atherosclerosis (Ross, 1999; Ohayon and others, 2011). Although the role of infectious agents is still disputed, several studies (Góis et al.,) demonstrated a link between viruses and bacteria and the development of atherosclerosis. 2006). Despite the fact that there is no generally recognized gathering of microbes or method accessible for assessing irresistible atherosclerosis, reports have related *Mycoplasma pneumoniae* (Momiyama et al., 2004, and *Chlamydia pneumoniae* (Hauer et al., 2006) and influenza viruses as a potential risk factor for coronary heart disease (CHD) 2010). The smallest microorganism without a cell wall and requiring cholesterol for growth, M. pneumoniae are auto-replicating (Razin et al., 1998). By altering the immune system of the host, they may also encourage the spread of additional infectious agents (Higuchi et al., 2003). C. pneumonia and atherosclerosis have been linked in the past (Danesh et al., 1997). Since there is a similitude in epidemiological way of behaving and anti-microbial opposition design between *M. pneumoniae* and *C. pneumoniae*, it has been proposed that *M. pneumoniae* may likewise assume a part in the improvement of atherosclerosis (Taylor-Robinson and Thomas, 1998). Higuchi et al. (2000), *M. pneumoniae* was discovered for the first time when *C. pneumonia* was found in necropsy samples (Higuchi et al., 2000). After that, a small number of additional studies have also shown that *M. pneumoniae* infections are linked to atherosclerosis (Momiyama et al., 2004; Reunanen and other, 2005). On the other hand, other studies found conflicting results regarding the role of *M. pneumoniae* in the pathogenesis of atherosclerosis. Hence, the relationship of *M. pneumoniae* is disputable and stays as obscure. Ischemic Heart Disease (IHD) is a coronary supply route illness which is a deep rooted significant reason for death and handicap in both created and non-industrial nations (Benefactor, 2009). Coronary artery disease (CAD) affects 12 million Americans and 143 million people worldwide, according to Selwyn and Braunwald (2005). Despite declines in developed nations, the prevalence of CAD risk factors and CAD mortality continue to rise rapidly in developing nations (Spence et al., 1999). Cardiovascular Disease (CVD) and Coronary Heart Disease (CHD) are major health issues in this nation. India has a total death rate of 156.87 per 100,000 people (36 percent) from cardiovascular disease (CVD), with diabetes accounting for an additional 5% of deaths (Rawas et al., 2012). According to Selwyn and Braunwald (2005), the primary pathophysiologic cause of IHD and Mycocardial Infarction (MI) is CAD, which reduces the oxygen supply to cardiac tissue and results in clinical manifestations of myocardial ischemia. In addition, atherosclerosis is the most common cause of coronary artery disease (CAD), and major risk factors include smoking, hypertension, diabetes mellitus, high plasma levels of low density lipoprotein (LDL), and low plasma levels of high density lipoprotein (HDL). Next to the deeply grounded customary gamble factors for atherosclerosis, studies have proposed that contamination with *Chlamydophila pneumoniae*, Helicobacter pylori and Cytomegalovirus can start or keep up with the atherosclerotic interaction (Danesh, 1999; Fong, 2000; Awadalla et al., 2011). In late examinations, there is information in writing concerning the relationship among IHD and Mycocardial dead tissue with *Mycoplasma pneumonia*, another abnormal bacterium which could connect with atherosclerosis either alone or conjunction with other customary gamble factors (Momiyama et al., 2004; Goyal and others, 2007;

Pourahmad and others, 2009). The smallest and simplest self-replicating microorganism, Mycoplasma pneumoniae, can persist as an asymptomatic infection that causes both Chlamydia pneumonia and chronic inflammation (Waiters and Talkington, 2004; Waites and other, 2008). This microbe is out of 17 known human mycoplasmas species, is a huge respiratory microorganism in people, everything being equal, causing respiratory illnesses and it might prompt clinically critical signs in extrapulmonary locales by direct attack as well as immunologic impacts. Some factors related to the pathogenicity of mycoplasmas include the activation of macrophages, the induction of cytokines, and the properties of super-antigens (Razin et al., 1998; 2004 Waiters and Talkington; Waites et al., 2008). According to Al-Nozha et al., there are no previous studies on the connection between exposure to *M. pneumoniae* and IHD and its complications in India. Additionally, there are no community-based national data on the prevalence of CAD in this country. 2004) and in a review it found the general commonness of computer aided design was 5.5% from a patients with measurably critical modifiable gamble factors (Al-Nozha et al., 2004). We conducted this study to recognize the role of this organism and its association with the risk of exposure to (IHD) among Indian population. As a result, it is essential to investigate the possible risk and relation of exposure to M. pneumonia infection for CAD and MI. The current review expects to assess the conceivable relationship of mycoplasma diseases in patients determined to have atherosclerosis by ELISA and PCR strategies.

2. Methodology

96 patients were studied in this case-control study. The study was carried out in Chennai, a city in the south India, from March 2021 to February 2022. The units were chosen using a straightforward method of non-random sampling. There were two groups of them: first gathering (or case bunch), incorporate 48 units who had been conceded in clinic by analysis of intense Coronary Condition (IHD, for example, temperamental ungina, Myocardial Dead tissue (STEMI, NSTEMI) and second gathering (or control bunch) incorporate 48 solid units who had no certain set of experiences of IHD and they matched by first gathering, for age file. The first group's inclusion criteria were: A positive electrocardiogram (ECG) and serum biomarkers for myocardial infarction are typical symptoms of IHD. Based on ECG data; There were two groups of the case group: Myocardial infarction with ST elevation and nonST elevation (STEM and NSTEMI, respectively) (Antman and Braunwald, 2005).

Avoidance rules for two gatherings were: Two circulatory strain accounts of 140/90 mm Hg or higher, fasting blood glucose level in excess of 110 mg dL−1 , serum all out cholesterol level in excess of 200 mg dL−1 , history of smoking and family background of coronary corridor sickness. A fasting blood sample of 3 milliliters was taken from all units (cases and controls) to look for M. pneumoniae serologic markers. ELISA was used to test for *M. pneumoniae* IgG antibodies; According to the manufacturer's guidelines, the Vircell Microbiologists Mycoplasma kit was used to detect IgG antibodies to *M. pneumoniae*. A sample with an antibody index value of more than 11 was considered seropositive for having IgG specific antibodies against *M. pneumoniae.* All our data was measurably examined by involving the Factual Bundle for the Sociologies rendition 13.0 (SPSS programming, Inc., Chicago, IL, USA). The t-test and chi square test were utilized for statistical analysis with SPSS software. When the P value was less than 0.05, the results were deemed statistically significant.

3. Results

Ninety-six out of 96 patients were examined. Mean age of the patients in the event that gathering was 62.54±11.19 and in control bunch was 64.68±13.65.There was not huge measurement distinction for age between two gatherings (p = 0.26) Fig. 1.

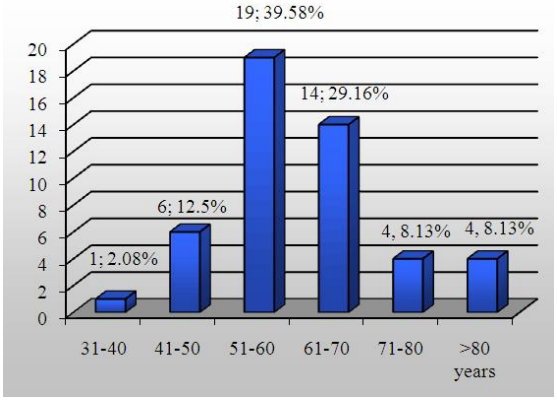

Fig. 1. Age wise distribution of Patients in case group (n = 48)

Table 1: Antimycoplasma antibody in case and control groups (n = 48; n = 48)

	Antimycoplasma ab		
Group	Positive	Negative	Total
Case	15	33	48
Control	3	45	48
P=0.004			

Table 2: Antimycoplasma antibody in STEMI, NSTEMI and Unstable angina

	Antimycoplasma ab		
MI Type	Positive%	Negative%	Total
STEMI	10 (40)	15 (60)	25
NSTEMI	1 (8.3)	11 (91.6)	12
Unstable angina	4 (36.3)	7 (63.6)	11
Total	15	33	48
P=0.138			

In the event that gathering (patients with analysis of intense Coronary Condition (IHD, for example, unsteady ungina, Myocardial Dead tissue - STEMI, NSTEMI) 15 cases out of 48 and in second gathering (control bunch) 3 units out of 48 were positive for antimycoplasma counter acting agent and this contrast was genuinely critical (p = 0.004) (Table 1). The relative risk of myocardial infarction in our patients who have an antimycoplasma antibody. OR = 5(95% C.I = 1.54-16.16). In both the case and control groups, the serum total cholesterol and fasting blood glucose levels were within normal ranges. In this review from 48 patients with Myocardial Localized necrosis, 25(52%) patients had STEMI and 12(25%) patients had NSTEMI, 11 (23%) patients had Temperamental angina; In the STEMI, NSTEMI, and Unstable angina groups, 10, 1,4 patients had positive antimycoplasma antibodies, but the difference was not statistically significant (p = 0.138) (Table 2).

4. Observations

There are a lot of studies that look at the risk factors for IHD and MI in populations. Some of these studies look at factors other than risk factors for IM. One of these factors is infection, which is a risk factor that needs more research. For this reason, we did this study to find out the role of infectious agents and how they relate to the risk of IHD. On the other hand, other studies have looked at how infections like *Mycoplasma pneumoniae* and *Chlamydia pneumoniae* an affect CAD and how they relate to IHD and MI. However, very few studies will help figure out how similar these infections are to IHD and MI. The Odds Ratio (OR) for *Mycoplasma pneumonia* infection in our MI patients was found to be 5.00, suggesting that this agent may be a risk factor for both IHD and MI in the current study. A comparable report was directed in Iran, in which seropositivity to Mycoplasma pneumonia was fundamentally higher (p<0.05) in computer aided design patients with MI than in those without MI and the dangers (Odd's ratio0 of this contamination has been accounted to be 2.7 (Pourahmad et

al., 2009), despite the fact that patients examined were of both sex, there was no huge measurement distinction in sex extent in the concentrated on gatherings (p = 0.26). In a previous study that was done on the same patients; According to Pourahmad (2005), the relative risk of *Chlamydia pneumonia* infection for MI was lower (OR = 2.3) than that of *Mycoplasma pneumonia*. *Mycoplasma pneumonia* seropositivity was found to be more common in patients with CAD than in patients without CAD in another Japanese study (14 percent versus 6 percent, p 0.01). The most elevated commonness was tracked down in patients with MI. In contrast, patients with and without CAD had similar rates of **Chlamydia pneumonia** seropositivity (62% versus 59%) (Momiyama et al., 2004). In contrast, the study by Momiyama et al. found that patients may contract Mycoplasma pneumonia and Chlamydia pneumonia concurrently, which may be a significant risk factor for CAD. It was found that among patients with Chlamydia pneumonia seropositivity, *Mycoplasma pneumonia* seropositivity was more common in patients with computer aided design than without computer aided design (17% versus 5%, p<0.01), while among patients without *Chlamydia pneumonia, Mycoplasma pneumonia* seropositivity didn't vary between patients with and without computer aided design (9% versus 6%). Only patients with Chlamydia pneumonia seropositivity were found to be associated with CAD, according to the study (odds ratio = 5.1, 95% CI = 1.8-14.9). As a result, the study suggested that Mycoplasma pneumonia and Chlamydia pneumonia coinfection may be a significant risk factor for CAD. The risk of coinfection for IHD and MI must therefore be determined. It ought to be take in thought that few case reports depicted a relationship between cerebral ischemia and Mycoplasma pneumonia diseases (Nakahata et al., 1983; Dowd et al., 1987; Tanir et al., 2006). However, Grau and his colleagues had not found any link between Mycoplasma pneumonia infection and ischemic cerebrovascular disease (Grau et al., 1995). According to Higuchi and his colleagues, the combination of Chlamydia pneumoniae and Mycoplasma pneumoniae may boost these microorganisms' virulence, favoring proliferation, plaque inflammation, and possibly plaque rupture. Mycoplasmas were available basically in the lipid center of the burst thrombosed plaque. Weak atheromas are wealthy in cholesterol and may lean toward the development of mycoplasmas, since the living beings require cholesterol or related sterols for development (Higuchi et al., 2000; Brown and others, 2010). Mycoplasma pneumonia, Chlamydia pneumonia, and other infectious agents and viruses were not directly linked to CAD, according to a recent Indian study. According to Padmavati et al.'s research, it is possible that these infections have an indirect negative impact on the lipid profile. 2012). In this study, we used the ELISA method to test for IgG antibodies against Mycoplasma pneumonia; because this assay is a reliable and useful method for diagnosing human respiratory disease caused by Mycoplasma pneumonia (Cassell et al.,) 1996), it was found the strategy offers a few significant benefits over other neutralizer identification techniques: increased sensitivity, immunoglobulin class and subclass specificity (Cassell et al., 1996) Specific antibodies of IgG have been detected by ELISA in patients older than 40 years old, and 56% of the time, only IgM antibodies respond, whereas IgM antibodies predominantly respond in children and adolescents (Cassell et al., 1996), the mean age of the patients in the case and control groups was 62.5411.19 and 64.6813.65, respectively. There was no statistically significant difference in age between the groups (p = 0.26), indicating that IgG antibodies are detected in older patients and that Mycoplasma pneumonia infection is associated with a higher risk of MI. The present study was found to be consistent with other studies, which found a link between IHD and Mycoplasma pneumonia that was not influenced by conventional risk factors; wilt the Mycoplasma pneumonia disease might have alone and additionally cofactor impacts with ordinary gamble factors, in patients with IHD and MI who has these traditional gamble elements will require further examinations to be attempted.

5. Conclusion

Our outcomes showed that Mycoplasm pneumoniae contamination is a gamble factor for IHD. This what is obviously the primary review performed for Mycoplasma pneumoniae in relationship with IHD in India. Further work study is expected to evalute the gamble of coinfection by Mycoplasma

pneumoniae and Chlamydia pneumonia. Moreover, evalution the impacts of the gamble of these contamination and customary gamble factors for IHD in this nation ought not set in stone.

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Section A-Research paper
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