Arrhythmias in Acute Myocardial Infarction*

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INTRODUCTION

Cardiac arrhythmia increases the incidence of death in patients with acute myocardial infarction. Reported series on arrhythmias in acute myocardial infarction are infrequent and, generally, the number of patients studied has been small; therefore, we undertook a large study with two major purposes. The first was to analyze the incidence of various cardiac arrhythmias in acute myocardial infarction and the effects of these on immediate prognosis. The second purpose was to study the influence of age, sex, location of infarct, left axis deviation, shock, hypertension, diabetes mellitus, and recurrent pain on the incidence of the various arrhythmias. Also, a review is made of prevailing methods of treatment for each major arrhythmia.

MATERIAL AND METHODS

The material of this study consisted of 500 consecutive admissions among 462 patients for acute myocardial infarction to The Charles T. Miller Hospital during the five-year period of July, 1957 through August, 1962. There were 309 men and 153 women who ranged in age from 28 to 93 years. The peak incidence for the men was in the sixth decade and for the women, in the seventh decade of life.

The presence of acute myocardial infarction was documented by both history and laboratory findings, including electrocardiography. The symptoms accompanying the acute episode were noted; the duration, location, and type of pain were recorded, as well as any recurrence of discomfort.

Laboratory data consisting of sedimentation rate, leukocyte count, and serum glutamic oxalate transaminase were correlated with the electrocardiographic findings.

Cases in which the electrocardiographic findings were equivocal and cases which were unsupported by laboratory data were not included in this series. All electrocardiograms were reviewed not only for signs of infarction, but for the presence or absence of an arrhythmia. From the electrocardiogram, the location of infarction was determined to be anterior, posterior (basal, postero-apical), lateral, atypical (subendocardial), or multiple. All "posterior" infarcts were combined for simplicity in reporting.

The arrhythmias were recorded with respect to their presence on admission or development during the period of hospitalization.

The significance of conduction defects with respect to atrioventricular (A-V) block, bundle-branch block, and marked left axis deviation was analyzed. Further, the influence of special complicating factors such as hypertension, diabetes mellitus, shock, pneumonia, and congestive cardiac failure, was evaluated.

Eight major series of acute myocardial infarction were collected from the literature representing 2,128 cases.1-4 These were compared collectively with our series regarding the incidence of arrhythmias and their association with mortality.

RESULTS

Incidence of Arrhythmias and Immediate Prognosis

Of these 500 admissions for acute myocardial infarction, 335 were in men and
165 in women. The distribution of anatomic types of myocardial infarcts was as follows: anterior, 208 (41.6 per cent); posterior, 138 (27.6 per cent); lateral, 18 (3.6 per cent); atypical, 96 (19.2 per cent); and mixed or multiple, 40 (8 per cent) (Fig. 1). Of the 500 admissions, there were 120 deaths (24 per cent). In 64 of these (53 per cent), necropsy was performed. The presence of myocardial infarction was confirmed by anatomic study in each instance; usually the location of the infarct conformed to the position suggested clinically.

Among 400 of the 500 admissions some arrhythmia was demonstrated (80 per cent). During the 400 admissions in which an arrhythmia was demonstrated, 108 patients died (27 per cent of 400 admissions). In 133 of the 400 admissions (33 per cent), there was a serious arrhythmia (sinus, atrial, nodal, or ventricular tachycardia; atrial fibrillation, atrial flutter, or second to third degree heart block), and of these, 47 per cent of the patients died (Fig. 2). Of the 100 admissions without arrhythmia, only 12 patients died (12 per cent).

A discussion of the incidence and immediate prognostic influence of each arrhythmia will be presented with respect to the findings in the literature as compared to this series. A brief discussion of treatment will be included with each arrhythmia discussed.

**Premature Ventricular Systole:** Premature ventricular systole was the most common arrhythmia encountered in this series (150 cases or 30 per cent of the entire series). The incidence of death in this group was 22 per cent, which is not increased as compared to the overall incidence of death in this series.

Review of the literature revealed that the incidence of this arrhythmia in acute myocardial infarction ranged from 12 to 33 per cent. It is likely that those series reporting a low incidence considered occasional premature ventricular contractions to be innocuous and did not include them. As reported in most of the other series, however, the incidence of death was hardly affected by premature ventricular contractions. Because ventricular premature beats may precede serious ventricular arrhythmias, many consider them potentially dangerous. This is true if they are frequent, multifocal, or if they occur in the so-called critical phase (supernormal recovery phase) at the very end of the absolute refractory period of the preceding beat. That extrasystoles did not have a poor prognostic influence in this series may indicate that serious ventricular arrhythmias do not often develop from extrasystoles. It should, however, be noted that a substantial percentage of these patients received prophylactic quinidine which may have prevented the occurrence of more serious arrhythmias in some of these.

Treatment with quinidine or procaine amide hydrochloride (Procycline hydrochloride) is usually effective in eliminating premature ventricular contractions (Table 1). The question of routine prophylactic...
use of drugs preventing extrasystoles in all patients having acute myocardial infarction has long been extensively debated.\textsuperscript{5,12}

Sinus Tachycardia: The incidence of sinus tachycardia in this series was under 10 per cent of all admissions and carried with it an incidence of death of over 50 per cent (Fig. 2), which is more than twice that for the overall series. Review of the literature on this subject\textsuperscript{4,5} revealed the incidence of sinus tachycardia to vary between 20 and 27 per cent with the incidence of death varying between 19 and 52 per cent (Fig. 3).

Sinus tachycardia thus represents a serious condition, the severity of which appears to be directly proportional to the ventricular rate. The demand for oxygen by the myocardium is increased in sinus tachycardia. Additionally, the inadequate time for diastolic filling potentiates existing poor coronary arterial perfusion. When accompanied by the already impaired coronary arterial circulation, such a complication can be disastrous.

The treatment of sinus tachycardia is generally not effective (Table 1). Digitalis may be helpful if the tachycardia is associated with congestive cardiac failure. Vas- gotonic agents may reduce the cardiac rate temporarily if the mechanism is initiated by sympathetic discharge. Vasopressors are of specific value if the tachycardia results from shock. Salicylates are of considerable value in reducing cardiac rate, if serious tachycardia is associated with fever.\textsuperscript{10} Sedation is extremely important in decreasing activity and anxiety of the patient and may reduce the cardiac rate to normal levels.

Sinus Bradycardia: Sinus bradycardia was found in 9 per cent of the admissions (46 admissions) (Fig. 2) for myocardial infarction in this series, as compared to an average of 15 per cent in the literature. It was associated with an incidence of death of 11 per cent, which was less than half that for the entire series (24 per cent) (Fig. 3). Some authors report a higher incidence of death (52 per cent) than that found in this series; they also report a higher overall mortality (up to 50 per cent or more). Some reports indicate lower values for death in patients having sinus bradycardia than in those having other arrhythmias.\textsuperscript{5}

It is possible that the long period of diastole in sinus bradycardia allows for

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\textsuperscript{*} Premature ventricular contractions occurred in 150 cases (30 percent)

FIGURE 2: The incidence of various arrhythmias in this study.
more effective ventricular filling, resulting in better cardiac output and more satisfactory coronary arterial perfusion. The favorable prognosis among patients with sinus bradycardia would suggest that physicians should avoid trying to alter this state.

**Atrial Fibrillation:** Atrial fibrillation occurred in 7 per cent of the cases in this series (34 admissions) (Fig. 2) compared to an incidence varying between 0-3 per cent in the literature. The incidence of death in this series was 38 per cent, which is almost half that reported in other series

(Fig. 3). When the arrhythmia is transitory, however, the reported series indicate that the incidence of mortality is usually not increased. Digitalis is the treatment of choice for atrial fibrillation which complicates acute myocardial infarction (Table 1). This agent creates reduced A-V conductivity, thereby reducing the ventricular rate. If sinus rhythm is not restored with complete digitalization, conversion to sinus rhythm may be attempted with quinidine. If the ventricular rate is sufficiently slower with digitalization there is little need to employ additional drugs such as quinidine. In the presence of acute myocardial infarction, some authors use digitalis with more hesitance than others in the belief that this agent can increase the degree of ventricular irritability. Under this form of treatment the risk of embolization is greater when atrial fibrillation is present, but adequate anticoagulant management may reduce this danger.

**Atrial Premature Beats:** Atrial premature beats occurred in 6 per cent of the cases (32 admissions) in this series and were associated with an incidence of death of 22 per cent, which closely approximates the overall mortality in the entire series. We found no series in the literature in which atrial premature beats were considered. According to findings in this series, the arrhythmia generally has little, if any, influence on the course of the patient with acute myocardial infarction.

Treatment with quinidine usually is effective in abolishing atrial premature beats, but the innocuous nature of this condition may not justify even the small risk associated with the use of this drug.

**Atrioventricular Block:** Some degree of atrioventricular block was found in 48 of the 500 admissions (10 per cent) in this series.

![Table 1: Guide in the therapy of specific serious arrhythmias occurring in acute myocardial infarction.](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21403/)
First degree A-V block—In 29 of the 48 instances, the A-V block was of the first degree (Fig. 2 and Table 2). This condition may generally be disregarded as shown from the findings in this series and those reported in the literature.\(^*\) The incidence of death among these patients was not appreciably different from the mortality average in the entire series. Specific treatment is not necessary.

Second degree A-V block—In ten admissions (2 per cent of the entire series) second degree A-V block was observed (Fig. 2 and Table 2). The incidence of death was 60 per cent as compared with 24 per cent in the entire series. This incidence is double that reported in the literature (Fig. 3). The treatment is similar to that for third degree A-V block (Table 1) and will be discussed subsequently.

Third degree A-V block—In the nine cases in this series manifesting third degree A-V block, the incidence of death was 22 per cent (Fig. 2 and Table 2). The low incidence of death in this series is contrary to that in all series reported in the literature,\(^*\) where the incidence of death varied between 76 and 100 per cent (Fig. 3). The incidence of A-V block was higher in cases of posterior septal (inferior, diaphragmatic) infarcts.\(^*\) This is due to the fact that usually both the A-V node and the posterior wall of the heart receive blood from the right coronary artery. In one reported series, however, there were ten cases of A-V block, six of which occurred with anterior infarcts.\(^*\)

We have no explanation for the low incidence of death among those patients with third degree block in this series. It may represent a phenomenon of chance involving a small number of cases with this condition.

The treatment of choice of both second and third degree A-V block is isoproterenol (Isuprel)\(^*\) (Table 1). Digitalis must be discontinued when it appears to be the cause of this arrhythmia. Quinidine and procaine amide hydrochloride (Pronestyl hydrochloride) are generally contraindicated.\(^*\) Molar sodium lactate is also advocated by some in the treatment of third degree A-V block.\(^*\)

Ventricular Tachycardia: Ventricular tachycardia was encountered in 2.6 per cent of our cases (13 admissions) (Fig. 2). It was associated with the highest incidence of death in this series (61 per cent). In the literature, the incidence of this arrhythmia is reported to be between 0 and 4 per cent, with the incidence of mortality ranging between 19 and 75 per cent\(^*\) (Fig. 3). Ventricular tachycardia is frequently the terminal event in an episode of acute myocardial infarction. It represents an emergency, justifying all urgent attempts to restore normal ventricular response.

The use of vasopressor drugs will tend to abolish this arrhythmia,\(^*\) whether or not it co-exists with marked hypotension (Table 1). Quinidine and procaine amide hydrochloride (Pronestyl hydrochloride) are the drugs of choice and may be administered orally or parenterally. During parenteral administration, electrocardiographic monitoring is advisable.\(^*\) Generally, digitalis is to be avoided, unless congestive cardiac failure is also present.\(^*\) Vagal maneuvers are totally ineffective.

Sinus Arrhythmia: Sinus arrhythmia occurred in 2.6 per cent of the admissions in

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\(^\wedge\) Posterior infarction present in 40\% of cases.
\(^\bullet\) In literature mortality 76-100 percent

Table 2: The incidence and occurrence of death in cases having first, second or third degree of heart block in this study. A guide to treatment is included.
this series (13 cases) (Fig. 2). None of the patients with this arrhythmia died. Sinus arrhythmia was not reported in this series by other authors, since it may justifiably be considered a variation of sinus rhythm. It is included in this series primarily because the irregular pulse in this condition may be confused with more serious conduction disturbances. Most of these patients had a rather slow ventricular rate. Treatment is not required.

Nodal Rhythm (Non-paroxysmal Nodal Tachycardia): Nodal rhythm occurred in 1.4 per cent of our cases (seven admissions) (Fig. 2). It was associated with an incidence of death of 43 per cent. The incidence of nodal rhythm in the literature varies between 1 and 5 per cent of all admissions for acute myocardial infarction and the associated mortality rate is between 0 and 66 per cent (Fig. 3). In those cases where digitalis administration seems to be a cause of this arrhythmia, discontinuation of the drug and administration of potassium are the obvious measures to employ (Table 1). Procaine amide hydrochloride (Pronestyl hydrochloride) has been advocated by some authors. Some cases are refractory to treatment with any agent.

Atrial Tachycardia: Atrial tachycardia was seen in 1 per cent of our admissions (six cases) (Fig. 2). None of the patients died. In the literature, the incidence is given as between 0 and 3 per cent of all admissions for acute myocardial infarction with a reported incidence of death varying between 19 and 87 per cent (Table 1). The absence of death in this study may be an artifact resulting from the small number of cases observed with this arrhythmia. Treatment employing carotid sinus massage is often effective in abolishing this arrhythmia. When these measures fail, subcutaneous administration of neostigmine (Prostigmine) in a dose of 1 mg. is often of value. Neostigmine (Prostigmine), however, must be used with caution, if at all, when asthma or intestinal obstruction are present.

Atrial Flutter: Atrial flutter occurred in 1 per cent of the patients in this group (five admissions) and was associated with a death incidence of 40 per cent (Fig. 2). This occurrence is somewhat lower than the incidence reported in the literature (0.5 to 3.0 per cent) (Fig. 3). Also, the incidence of death in the literature ranged between 60 and 87 per cent, which was greater than in this series. Slowing of the ventricular rate by delaying A-V conduction is the therapeutic approach to be taken and digitalis is the choice in this case (Table 1). Quinidine may be used after the ventricular rate has been slowed with digitalis. Carotid sinus massage may decrease the rate transiently; therefore, this maneuver is of more value diagnostically than it is therapeutically.

Factors Influencing the Prognosis in Patients with Arrhythmia.

The overall mortality in those admissions with any arrhythmia was 27 per cent. In the 20 per cent of admissions in whom arrhythmia did not occur, the incidence of death was 12 per cent. When the cases with serious arrhythmias (sinus, nodal and atrial tachycardia, ventricular tachycardia, and second and third degree heart block) were combined, the incidence of death was 46 per cent in men and 47 per cent in women.

The total incidence of arrhythmias increased slightly with age. Further, there was a higher incidence at an earlier age in men. For example, the incidence in the fourth decade in men was higher than that of women in the fifth decade. The incidence of arrhythmias among men and women became about equal by the seventh decade.

For each sex, the incidence of serious arrhythmias remained nearly constant regardless of age. There was, however, a slight increase with age among the arrhythmias having lesser significance.

The incidence of death in cases associated with serious arrhythmias increased steadily with age (Fig. 4). This occurred despite the fact that the incidence of the
serious arrhythmias remained constant. For example, ventricular tachycardia in a man 80 years of age was associated with twice the risk of death encountered with this arrhythmia at age 60. In women, the incidence of death resulting from serious arrhythmias lagged behind that in men by one decade.

Those with ventricular tachycardia had the highest incidence of death (61 per cent). Sinus arrhythmia and sinus bradycardia were associated with the lowest incidence of death (0 and 11 per cent, respectively). There is a shortened period of diastole in all types of tachycardia. This could further reduce the poor coronary blood flow, which could serve to provoke or perpetuate a serious arrhythmia.

The incidence of serious arrhythmias ranged from 30 to 45 per cent among all locations of infarction. When serious arrhythmias were associated with either lateral or multiple infarcts, however, there was a significantly higher incidence of death (63 and 87 per cent, respectively) than in cases having other infarcts.

There are two factors associated with the high mortality in cases having serious arrhythmia with lateral or multiple infarcts. First, both lateral and multiple infarcts occurred in individuals who were an average of ten years older (68 years) than the mean age for the entire series.

Second, when an artery to the sino-atrial or A-V node is poorly perfused, infarction of these important structures may occur and arrhythmia may result. It must be interjected, however, that actual coronary occlusion occurred in only about two-thirds of all cases of myocardial infarction. In the remaining 40 per cent, there was no major occlusion.

James7 has pointed out that the A-V node is most commonly supplied by a branch of the right coronary artery; the sino-atrial node is usually supplied by the right also, but it is frequently supplied by a branch of the left coronary artery. The same author also reported a high incidence of arrhythmias and conduction disturbances in posterior infarcts. He also observed that lateral infarcts are associated with small loss of myocardial mass, but with a high incidence of arrhythmias and heart block. James7 proposed that interruption of critical arterial supply to the A-V and sino-atrial nodes accounted for the increased risk in these patients. Theoretically, in multiple infarcts, the chance of occlusion

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**Figure 3:** The incidence of death in cases having serious arrhythmias in this study compared to selected studies reported in the literature.
of one of these supply lines would be quite likely.

In addition, infarction or ischemia of the sino-atrial node in individuals with myocardial infarction is seemingly as grave as similar involvement of the A-V node. This is true because rapid atrial arrhythmia in the presence of myocardial ischemia frequently results in ventricular arrhythmia.

The major QRS axis (left or right axis deviation), right and left bundle-branch block, and non-specific intraventricular conduction disturbances did not affect the incidence of death in this series. Left axis deviation, however, was associated with bundle-branch block more commonly than the normal QRS axis (24 per cent as compared to 12 per cent). Surprisingly, hypertension, shock, diabetes mellitus, and recurrent pain did not significantly influence the incidence of arrhythmias or the incidence of death among patients with the various arrhythmias noted.

TREATMENT

Therapy for arrhythmias in acute myocardial infarction is generally effective (Fig. 4). As indicated, sedation for the control of restlessness and apprehension is extremely important in reducing the cardiac rate. Vasoppressor drugs to maintain normal levels of blood pressure and digitalis for those in congestive failure are primary considerations. Effective treatment of the arrhythmia depends upon maintenance of cardiovascular competence. Those measures which are aimed toward restoring normal cardiac output may, in themselves, restore normal cardiac rhythm. Digitalis, quinidine, and procaine amide hydrochloride (Pronestyl hydrochloride) will be successful in the treatment of over 90 per cent of the arrhythmias encountered in acute myocardial infarction. In the remainder, employment of less common agents is occasionally indicated. The discussion that follows is limited to the indications for digitalis, quinidine, and procaine amide hydrochloride (Pronestyl hydrochloride).

Digitalis: Digitalis is of the most value in the treatment of atrial arrhythmias, especially atrial fibrillation, atrial flutter, and atrial tachycardia. The main reasons for its efficacy would appear to be a vagal-like action in slowing the sino-atrial (S-A) node, as well as its ability to delay conduc-

![Graph](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21403/)

**Figure 4:** The incidence of death in this study in various decades. The incidence of death at any age is higher in those patients with serious arrhythmia than in those patients without arrhythmia.
tion in the A-V node. It is sometimes possible to predict the effects of digitalis by employing carotid pressure while monitoring the electrocardiogram in individuals having atrial arrhythmias. Occasionally, carotid sinus massage will decrease the rate transiently or will cause a conversion to normal sinus rhythm. A positive result would predict a satisfactory response to digitalis. A negative result, however, does not preclude the effectiveness of the drug. Digitalis is of no value and is actually contraindicated in ventricular tachycardia, A-V block, and nodal rhythm. It is of no significance in the treatment of premature ventricular systoles. Digitalis may be given in any of the aforementioned conditions, however, if congestive failure is present.

Quinidine: Quinidine is probably the drug of choice in the treatment of premature beats, and is valuable in converting atrial fibrillation to normal sinus rhythm. It is the opinion of most authors, however, that digitalization should first be accomplished in order to delay A-V conduction. When the atrial rate is rapid and quinidine is given without satisfactory A-V block, a 1-1 relationship may occur between the atria and ventricles creating an even more rapid ventricular rate. Quinidine is of great value in treating ventricular tachycardia and often of value in atrial flutter and atrial tachycardia. It has no value in the treatment of nodal rhythm and is usually contraindicated in A-V block.

Procaine Amide Hydrochloride (Pronestyl Hydrochloride): The primary use of Pronestyl is in the treatment of ventricular tachycardia. It is quite effective in abolishing premature beats, especially those of ventricular origin and may be of value in atrial tachycardia. It is occasionally employed in the treatment of atrial fibrillation, atrial flutter, and nodal rhythm but, like quinidine, it is usually contraindicated in A-V block.

Summary

Five hundred admissions for acute myocardial infarction were studied for the incidence of arrhythmias. (The incidence of death in the entire series was 24 per cent). Three hundred and eighty-one patients representing 400 admissions demonstrated an arrhythmia of some type (80 per cent). In those with any arrhythmia, death occurred in 27 per cent; in those without arrhythmia, death occurred in 12 per cent. Serious arrhythmias, however, were accompanied by a death incidence of 47 per cent. The incidence of serious arrhythmias remained relatively constant among all age groups, while the incidence of lesser arrhythmias increased with age. With increasing age, there was a greater incidence of death in those with serious arrhythmias, despite the fact that the incidence of serious arrhythmias remained relatively constant at various ages. Among men with serious arrhythmias there was a 10 per cent higher incidence of death than among women of the same age.

The incidence of death in patients having minor arrhythmias or normal rhythm was lower than that for the entire series but increased from 8 to 22 per cent with advancing age. Sex did not alter the incidence of death in this group.

Ventricular tachycardia was associated with the highest incidence of death (61 per cent). Sinus bradycardia was associated with a lower incidence of death (11 per cent) than was encountered in the overall series (24 per cent). In sinus tachycardia, the incidence of death (50 per cent) was twice that for the entire series.

Among the various anatomic types of infarction, lateral and multiple infarcts were associated with a higher than average incidence of death (68 per cent). Although there was no increased incidence of serious arrhythmias, the incidence of death was greater when serious arrhythmias occurred in these types of infarcts. As compared to the same arrhythmias in association with other anatomic types of infarction this may have resulted from the older age of patients having these infarcts or from the frequent association of these infarcts with altered blood flow to the S-A or A-V node.
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ARRHYTHMIAS IN ACUTE MYOCARDIAL INFARCTION

Hypertension, marked left axis deviation, diabetes mellitus, shocks, and certain other factors did not seem to influence the incidence of death in patients with the various arrhythmias. The treatment of each arrhythmia is briefly discussed, as are the indications and contraindications for the commonly used “cardiac” drugs.

ACKNOWLEDGMENT: The authors are most indebted to Dr. Jesse E. Edwards for his assistance in planning, implementing, and editing this report.

RESUMEN

Investigando la frecuencia de las arritmias se estudiaron quinientos casos al ingresar. (La frecuencia de la defunción fue de 24 por ciento en toda la serie. Trescientos ochenta y uno enfermos, correspondientes a 400 ingresos, mostraron arritmia de algún tipo (80 por ciento). En los que tuvieron cualquier forma de arritmia, las defunciones se presentaron en el 12 por ciento. Las arritmias graves se presentaron, sin embargo, acompañadas de una mortalidad de 47 por ciento. La frecuencia de las arritmias graves permaneció relativamente constante en todos los grupos de edad, en tanto la de las arritmias menores aumentó con la edad. A medida que era mayor la edad, la mortalidad aumentó en los que tenían arritmias graves, a pesar de que la frecuencia de las arritmias graves permaneció constante en todas las edades. Entre los hombres con arritmias graves la mortalidad fue 10 por ciento más elevada que entre las mujeres.

La frecuencia de la muerte entre enfermos con arritmias menores, fue más baja que la de la serie completa, pero aumentaron de 8 a 22 por ciento al ser más avanzada la edad. El sexo no pareció influir en la frecuencia de la muerte en este grupo.

La taquicardia ventricular se asoció con la mayor frecuencia de la muerte (61 por ciento). La bradicardia sinusal se asoció a una menor mortalidad (11 por ciento) que la encontrada en toda la serie (24 por ciento). En la taquicardia sinusal, la frecuencia de la muerta (50 por ciento) fue doble de la de toda la serie.

Entre los diversos tipos anatómicos de infarto, el lateral y los múltiples se asociaron con mayor frecuencia de defunciones (68 por ciento), aunque no hubo frecuencia aumentada de las arritmias graves en estos tipos de infarto. Comparadas con las mismas arritmias pero asociadas a otros tipos anatómicos de infarto, puede haber resultado esto de la mayor edad de los enfermos que sufrieron estos infartos con flujo sanguíneo alterado hacia el nodo S-A o A-V.

La hipertensión, la marcada desviación axial hacia la izquierda, la diabetes, el shock y ciertos otros factores, no parecieron influir en la frecuencia de la muerte en enfermos con diversas arritmias. Se comenta el tratamiento de cada arritmia, así como las indicaciones y contraindicaciones de las drogas “cardiacas” habitualmente usadas.

RESUMÉ

Cinq cents hospitalisations pour infarctus myocardique aigu ont été etudiees en ce qui concerne la fréquence des arythmies. La fréquence de la mort dans la série entière a été 24%. 381 malades représentant 400 hospitalisations ont présenté une arythmie de quelques types (80%). Chez ceux ayant des arythmies, la mort est survenue dans 12% des cas. Des arythmies graves, cependant, ont été suivies par la mort dans 47% des cas. La survenue d’arythmie grave reste relativement égale dans tous les groupes d’âge, alors que la fréquence d’arythmie plus bénigne augmentait avec l’âge. A mesure que l’âge augmente, il y avait plus de mortalité dans les cas avec des arythmies graves, malgré le fait de la fréquence d’arythmie grave reste relativement constante à des âges variés. Dans le groupe d’hommes avec arythmie grave, il y avait une mortalité de 10% plus élevée que chez les femmes du même âge.

Le nombre de mort chez les malades ayant des arythmies bénignes ou à rythme normal est plus bas que pour la série entière, mais augmente de 8 à 22% à mesure que l’âge avance. Il n’y a pas de différence de mortalité dans ce groupe suivant le sexe.

La tachycardie ventriculaire s’associe avec la plus forte mortalité (61%). La bradycardie sinusal s’associe avec une mortalité plus faible (11%), que dans l’ensemble de la série (24%). Dans la tachycardie sinusal, la mort (50% des cas) est survenue 2 fois plus souvent que dans la série entière.

Parmi les différents types anatomiques d’infarctus, les localisations latérales ou multiples s’associent avec une mortalité (68%) plus haute que pour la moyenne. Quoique n’y ait pas de fréquence particulièrement grande d’arythmie grave, la mortalité était plus grande quand des arythmies graves sont survenues dans ces types d’infarctus. Par comparaison aux mêmes arythmies survenant dans d’autres localisations anatomiques d’infarctus, ceci peut résulter d’un âge plus avancé chez les malades ayant ce type d’infarctus ou de la fréquente association de ces infarctus avec une irrigation défectueuse aux nœuds sino-auriculaires ou aux nœuds auriculoventriculaires.

L’hypertension, une déviation axiale gauche marquée, le diabète sucré, le choc, et d’autres facteurs, n’ont pas semblé influencer le pourcentage de la mort chez les malades ayant ces di-
verses arrhythmies. Le traitement de chaque arrhythmie est brièvement discuté, tout comme les indications et les contre-indications des médicaments "cardiaques," habituellement utilisés.

**Zusammenfassung**


Ventrilkuläre Tachycardie war mit der größten Häufigkeit von Todesfällen verknüpft (61%). Die Sinus-Bradyarrhythmie war verknüpft mit einer geringeren Häufigkeit von Todesfällen (11%) als in der Gesamtgruppe berechnet wurde (24%). Bei doo Sinus-Tachycardie lag die Häufigkeit von Todesfällen (55%) doppelt so hoch als die Gesamtserie.

Unter den verschiedenen anatomischen Infarkttarten waren die lateralen und multiplen Infarkte verknüpft mit einer gegenüber dem Durchschnitt höheren Sterblichkeit (68%). Obwohl keine stärkere Häufigkeit schwerer Arrhythmien beobachtet wurde, lag die Häufigkeit der Todesfälle höher, wenn schwere Arrhythmien bei diesen Infarkttypen auftraten. Dies kann bei einem Vergleich derselben Arrhythmien in Verbindung mit anderen anatomischen Infarkttypen die Folge höherer Alters der Patienten, die diese Infarkte haben, oder aus der häufigen Verknüpfung dieser Infarkte mit veränderter Durchströmung in der S-A oder dem Atrio-Ventrikularknoten sein.

Hypertonie, ausgeprägte Linkverschiebung, Diabetes, Schock und bestimmte andere Faktoren schienen keinen Einfluß auf die Todesfallhäufigkeit bei Patienten mit verschiedenen Arrhythmien zu haben. Die Behandlung der Arrhythmie wird kurz diskutiert, wie es den Indikationen und Kontraindikationen für diese gewöhnlich gebrauchten "kardialen" Medikamenten entspricht.

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