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The Prevalence Of Aspirin Use As A Primary Prevention In Hypertensive Patients In Tikrit City

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Abstract

The aspirin use for secondary prevention of cardiovascular disease (CVD) is strongly supported and is well established but its use for primary prevention of cardiovascular events is a source of major debate due to that persons without a previous history of CVD are less likely to have future cardiovascular events, so there is unclear balance between benefits of aspirin to decrease the risk as primary prevention and harms of increase risk of both gastrointestinal bleeding and hemorrhagic stroke. This was reflected in international trails and guidelines. In this study, to balance the risk and benefit of using aspirin for primary prevention of CVD, and depend on trials and guidelines, the using of aspirin is more beneficial and indicated in patients with high ASCVD risk (e.g., as calculated by ASCVD risk score ((which used to calculate the 10 years risk of major coronary events in adults)) as >10%, or depending on the presence of certain ASCVD risk factors), in patients with age between 40-70 and low risk of bleeding. This study aimed to estimate the prevalence of aspirin use in hypertensive patients for primary prevention of cardiovascular diseases. One hundred fifty hypertensive patients (75 male) and (75 female) attending the outpatient clinic in Saladin general hospital in Tikrit city were included in this study from January 2018 to December 2019. Considering these parameters (age, total cholesterol level, systolic blood pressure (BP), high density lipoprotein cholesterol (HDL), and smoking) in every patients.

استعمال الاسبرين كعامل وقائي اولي للإصابة بأمراض القلب والأوعية الدموية في مرضى ارتفاع ضغط الدم الشرياني

ملخص:

إن استخدام الأسبرين للوقاية الثانوية من أمراض القلب والأوعية من الراسخ والمدعوم بقوة ولكن استخدامه للوقاية الأولية من أحداث القلب والأوعية الدموية هو مصدر جدل كبير نظراً لأن الأشخاص الذين ليس لديهم أمراض قلبية وعائية سابقة هم أقل عرضة للإصابة بأمراض القلب والأوعية الدموية في المستقبل ، لذلك لا يوجد توازن واضح بين فوائد الأسبرين لتقليل المخاطر مثل الوقاية الأولية والأضرار التي تزيد من خطر الإصابة بالنزيف المعدي المعوي والسكتة الدماغية النزفية. وقد انعكس ذلك في المسارات والمبادئ التوجيهية الدولية. في هذه الدراسة ، لتحقيق التوازن بين فوائد ومخاطر استخدام الأسبرين كوسيلة وقاية أولية من الأمراض القلبية الوعائية ، والاعتماد على التجارب والإرشادات ، يكون استخدام الأسبرين أكثر فائدة ومشار إليه في المرضى الذين يعانون من ارتفاع مخاطر ASCVD على سبيل المثال ، كما تم حسابه من خلال درجة مخاطر ASCVD التي كانت تستخدم لحساب خطر ١٠ سنوات لأحداث الشريان التاجي الرئيسية لدى البالغين وبنسبة $< 10\%$ ، أو بناءً على وجود عوامل خطر محددة لـ ASCVD ، في المرضى الذين تتراوح أعمارهم بين ٤٠-٧٠ وخطر النزيف المنخفض. هدفنا هو تقدير مدى انتشار استخدام الأسبرين في مرضى ارتفاع ضغط الدم للوقاية الأولية من أمراض القلب والأوعية الدموية. تم تضمين مائة وخمسين مريضاً في ارتفاع ضغط الدم (٧٥ ذكرًا) و (٧٥ أنثى) يترددون على العيادة الخارجية في مستشفى صلاح الدين العام في مدينة تكريت في هذه الدراسة من كانون الثاني (يناير) ٢٠١٨ إلى كانون الأول (ديسمبر) ٢٠١٩ .

Introduction

Acetylsalicylic acid (“aspirin”) is an antiplatelet drug that irreversibly inhibits the platelets by acetylating the serine residue of the cyclooxygenase- 1 (COX-1) in platelets that lead to reduce levels of prothrombotic thromboxane A2.¹⁻³

The use of aspirin for secondary prevention of cardiovascular disease (CVD) is well established and strongly supported.⁴⁻⁸

Aspirin use for primary prevention of cardiovascular events is a source of major debate. This is due that persons who does not have a previous history of CVD are less likely to have future cardiovascular events than those with a prior history, so there is unclear balance between benefits of aspirin to decrease the risk as primary prevention and harms of increase risk of both gastrointestinal bleeding and hemorrhagic stroke. This was reflected in international trails and guidelines.⁹

Recently a meta-analysis of thirteen trails, a three new trials in 2018 as ASCEND (A Study of Cardiovascular Events iN Diabetes)¹⁰, ARRIVE (A Randomized Trial of Induction Versus Expectant Management) trail¹¹, The ASPREE (Aspirin in Reducing Events in the Elderly) trial¹² in addition to ten previous primary prevention, confirmed that there was no alteration in risk and benefits of aspirin for primary prevention. There was a 11% reduction in the risk of CVD and bleeding risk was increased 43%. The total mortality was decrease by 6%. These effects seems to be the similar for individuals with diabetes.¹⁴

The 2019 American Heart Association (AHA) guideline on the primary prevention of cardiovascular disease recommend that aspirin may be considered as a (class Iib) for a selected age of adults (40 to 70) who are at higher CV risk but with no high bleeding risk¹⁵. But not in adults >70 years of age when it is potentially harmful given the higher risk of bleeding in this age group.¹² .For those adults aged <40 years

, there is insufficient evidence to judge the risk–benefit ratio for the routine use of aspirin for the primary prevention of ASCVD.¹¹

The United States (U.S.) Preventive Services Task Force and many trails favorite the initiation of aspirin treatment according to age and >10% estimated 10-year Atherosclerotic cardiovascular disease (ASCVD risk) .^{15,17,18,19}

In this study, to balance the benefits and risks of using aspirin as primary prevention of CVD, and depend on above trials and guidelines, the using of aspirin is more beneficial and indicated in patients with elevated ASCVD risk (e.g., as calculated by ASCVD risk score (figure 1) or based on the presence of specific ASCVD risk factors).^{16,17} in patients with age between 40-70 and low risk of bleeding.²⁰

Atherosclerotic Cardiovascular Disease Risk (10y)

Inputs

Patient Data

Gender Male Female

Patient Age years

Ethnicity Factor white (non-black) black

Labs

Cholesterol (S) mg/dL

HDL (S) mg/dL

SBP mmHg

On HTN meds No Yes

Diabetes Mellitus No Yes

Smoking No Yes

Reset Calculate

Outputs

ASCVD Risk (10y) %

Atherosclerotic Cardiovascular Disease Risk (10y)

Figure (1) Atherosclerotic cardiovascular disease risk score. HDL= high density lipoprotein, SBP= systolic blood pressure, HTN =hypertension, ASCVD = Atherosclerotic cardiovascular disease .²¹

Aim Of The Study

Is to estimate the prevalence of aspirin use in hypertensive patients for primary prevention of cardiovascular diseases.

Study Design

Prospective study for the use of Aspirin as a primary preventive measure.

Patients And Methods

One hundred fifty hypertensive patients (75 male) and (75 female) attending the outpatient clinic in Saladin general hospital in Tikrit city were included in this study from January 2018 to December 2019. The diagnosis of arterial hypertension should have been already settled for every patient (BP \geq 140 mmHg or on antihypertensive medications), their age range between 40 -70 years with a mean 52.8 ± 11.9 years for men and 52.9 ± 9.97 years for women. The history information was taken by the same examiner and directly from the self-declaring of the patients.

The blood pressure was measured after five minutes of rest. Two readings were taken, two minutes apart, all patients were checked by the same examiner.

After 12 hours of overnight fast, blood samples were taken from all participants. An estimate for lipid profile , complete blood picture , fasting blood sugar were made in the laboratory of Saladin general Hospital by using enzymatic kit method, using reagents of bio Merieux Sa laboratory.

Considering these parameters (age, total cholesterol, high density lipoprotein cholesterol (HDL), systolic blood pressure (BP), and smoking). ASCVD score was used to calculate the 10 years risk of major coronary events in adults as in figure (1). The score $>10\%$, family history of premature of ischemic heart disease , patient with uncontrolled blood pressure or blood sugar were regarded as high risk groups and primary prevention was indicated if there is no contraindication to aspirin.

The exclusion criteria are : age below 40 and above 70 years, chronic kidney disease , a history of previous gastrointestinal bleeding or peptic ulcer

disease or bleeding from other sites, coagulopathy, thrombocytopenia, and concurrent use of other medications that increase bleeding risk, such as non-steroidal anti-inflammatory drugs, oral anticoagulants as warfarin and steroids.

Statistical tests

Chi square was used for statistical analysis of the results, P value was considered significant if it is (< 0.05) by using the IBM SPSS STATISTIC 25

Results:

Table (1):- the distribution of indication the aspirin taking in 150 patients.

patient	Indicated for aspirin		Not indicated for aspirin		total	p-value
	59(39.3%)		91(60.7%)			
	History of aspirin taking (%)	Not taking (%)	History of aspirin taking (%)	Not taking (%)		
Number (%)	22 (14.7%)	37 (24.6%)	12 (8%)	79 (52.7%)	150 (100%)	0.0006

Table (2): The prevalence of aspirin taking in indicated hypertensive patients according to sex, age, Blood pressure, serum cholesterol, smoking, diabetes mellitus and compliance to drugs .

Parameters	Total number	Indicated patients for aspirin taking in total number (%)	Prevalence of aspirin taking in indicated patients (%)
sex	Male	75	42/75 (56%)
	Female	75	17/75 (22.7%)
Blood pressure	<140mhg	8	2/8 (25%)
	140-159mmhg	64	18/64 (28%)
	160-179mmhg	45	20/45 (44.4%)
	≥180mmhg	33	19/33 (57.6%)
Serum cholesterol	<200mg/dl	88	30/88 (34%)
	200-239mg/dl	44	16/44 (36.4%)
	≥240mg/dl	18	13/18 (72.2%)
Smoking	Men	26	19/26 (73.1%)
	Women	11	6/11 (54.5%)
Diabetes mellitus	Men	15	13/15 (86.7%)
	women	22	12/22 (54.5%)
Compliance	Compliance	47	17/47 (36.2%)
	incompliance	103	42/103(40.8%)

Table (3):- the causes of under taking of aspirin in indicated patients.

Causes	Number	%	P value
Under (not) prescribed by physician	31	83.8%	<0.001
Poor compliance of the patients	4	10.8%	
Side effects of aspirin	2	5.4%	
Total	37	100%	

Discussion

In this study 59 (39.3%) of patients were indicated for aspirin taking for primary prevention (table 1) with p value =0.0006. This is not so far from results of Framingham Heart Study which was (42.6%)²² but far away from result of Liu study which was 69.7%.²³

According to the American College of Preventive Medicine²⁴, 43% of United States adults aged ≥40 years who are at increased risk of cardiovascular events are not using aspirin therapy in compare to 62.8% in this study which similar to Liu study as 70.8%²³. In 2003, Randall Stafford and colleagues²⁵ found that only about 33.3% of high risk patients were prescribed aspirin for primary prevention, which is similar to the results of this study 22 (37.2%) in (table 2) which explained the poor primary health care programs and delay in attention of preventive medicine.

In this study, aspirin was indicated in 59 patients out of 150 (39.3%). Male out number female in this regard, where 42 patients (56%) met the criteria for aspirin therapy, compared to 17 female patients (22.7%) in (table 2). In Framingham Heart Study²⁶, the indication to aspirin taking was higher (47%) in men than in women (22%).

The indication of aspirin taking increase with increase total cholesterol level but the prevalence of aspirin use in indicated patients according to the total cholesterol level was (40%) as in (table 2) in desirable level group and lower in .

border line and high level groups which differ from the result of AHA study.²⁶

Cigarette smoking is the foremost preventable cause of death and efforts toward smoking cessation deserve high priority²⁷. In this study, 37 patients (24.7%) of cases were smokers (table 2). The true prevalence of aspirin taking in these patients was (28%) which similar to AHA study (28.8%).²⁶ In Framingham Heart Study, the smokers were 40%.²⁷

In Renfrew & Paisley study the smokers were 51% with no real difference between men and women.²⁸

In this study, there is 37 diabetic patients (24.7%), two third of them was indicated for aspirin taking, 36% of indicated patients had history of aspirin taking (table 2) which was similar to the results of AHA study²⁶ (37.9%) and p value 0.033.

Poor compliance to antihypertensive therapy is not merely a local observation. In this study the compliance to antihypertensive drugs was 31.3% with no real difference in male and female (table 3), which could be explained by the poor concepts of patients about the risks of uncontrolled hypertension²⁹. This result is similar to Califf et al study in 2002.^{30, 31} Stanford University Medical Center clarified that 50%-60% of patients adhere well to prescribed regimen²⁹.

In this study, the underuse of aspirin taking causes are mainly physician related in 83.8% of cases as the fear of physician from the

complications or had a little idea regarding the use of aspirin for the primary prevention of CVD. The causes related to patients were poor compliance in 10.8% and stopping of aspirin due to side effects in 5.4%. The p value <0.001.

Conclusions

There is a significant underuse of low-dose aspirin as a primary prevention of cardiovascular events in high risk hypertensive patients.

Recommendations

Clinicians need to be actively involved in educating health care professionals about the benefits and risk of using aspirin for the prevention of cardiovascular diseases in high risk hypertensive patients.

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