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Exploring the potential new way of risk prediction in heart diseases

Submission date	Recruitment status	[_] Prospectively registered
28/05/2008	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
26/06/2008	Completed	[X] Results
Last Edited	**Condition category**	[_] Individual participant data
04/01/2019	Circulatory System	

Plain English summary of protocol

Background and study aims
Diabetics often have silent heart disease which goes undetected. Despite controlling blood pressure (BP) and cholesterol, unexpected cardiac deaths still occur which means we need better ways of predicting those at high risk. A whole new possibility is to measure a substance in the bloodstream called brain natriuretic peptide (BNP), which should help identify silent heart disease which may otherwise progress to unexpected cardiac death. This work will see how good BNP is at identifying silent asymptomatic heart disease. The possibility is to use BNP for this purpose in the future so as to prevent unexpected cardiac deaths. The aim of this study is to examine if a blood sample measured for brain natriuretic peptide (BNP) might be a way of identifying those who have silent heart disease and its form.

Who can participate?
Adults aged 50 and older who have been treated for hypertensive of hypercholestromlemic.

What does the study involve?
Participants with no heart disease provide a blood sample taken and then undergo a full cardiac assessment. The blood sample results and the cardiac scan results are linked to look for whether BNP identifies those with silent heart disease

What are the possible benefits and risks of participating?
Participants may benefit from the BNP screening to identify if they have silent heart disease, enabling earlier treatment. There are no direct risks however participants may experience discomfort when providing blood samples.

Where is the study run from?
Ninewells Hospital and Medical School (UK)

When is the study starting and how long is it expected to run for?
February 2008 to December 2017

Who is funding the study?
British Heart Foundation (UK)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

Study information

Scientific Title
The potential to improve primary prevention by using brain natriuretic peptide (BNP) as an indicator of silent 'pancardiac' target organ damage

Acronym
The 5P Study

Study objectives
Despite controlling blood pressure (BP) and cholesterol, unexpected cardiac deaths still occur which means we need better ways of predicting those at high risk. A whole new possibility is to measure a substance in the bloodstream called brain natriuretic peptide (BNP), which should help identify silent heart disease which may otherwise progress to unexpected cardiac death. This work will see how good BNP is at identifying silent asymptomatic heart disease. The possibility is to use BNP for this purpose in the future so as to prevent unexpected cardiac deaths.

Study 1: What is the spectrum of cardiac target organ damage seen in those with an elevated BNP level?
Study 2: Does an elevated BNP in the absence of current ischaemia, left ventricular hypertrophy (LVH) or left atrial dilatation (LAD) identify those who will later develop LVH or LAD?

Ethics approval required

Old ethics approval format

Ethics approval(s)
Tayside Committee on Medical Research Ethics, 13/02/2008, ref: 08/S1402/15

Study design
Observational cohort study

Primary study design
Observational

Study type(s)
Diagnostic

Health condition(s) or problem(s) studied
Cardiovascular diseases

Interventions
This is an observational cohort study where participants will undergo standard diagnostic tests but no pharmacological, surgical or lifestyle interventions will be made.

Study 1: What is the spectrum of cardiac target organ damage seen in those with an elevated BNP level?

The Participants will all undergo a full clinical assessment including 24 hour BP monitoring. In addition, blood samples will be taken for the following:
1. Total cholesterol, high density lipoprotein (HDL) cholesterol, low density lipoprotein (LDL) cholesterol and triglycerides (fasting)
2. BNP, N-terminal BNP and N-terminal Atrial Natriuretic Peptide (ANP). BNP will be measured by a near patient BNP test (Biosite®) and by a standard radioimmunoassay (RIA) on a sample stored at -70 C° using the Peninsula® kit. N-terminal ANP and N-terminal BNP will also be measured by commercially available RIA kits.
3. Kidney function will be measured in three ways
4. Microalbuminuria. We will also be able to assess the value of measuring both BNP and microalbuminuria to identify cardiac target organ damage (TOD).
5. Electrocardiogram (ECG) and 24 hour ECG tape to identify paroxysmal arrhythmias, especially atrial fibrillation (AF)
6. Echocardiography for target organ damage. All measurements will be made according to the American Society of Echocardiography (ASE) recommendation.
7. Silent coronary disease. A non-invasive technique is obviously necessary. We have opted for a dual approach, i.e. dobutamine stress echocardiography (DE) with nuclear stress perfusion imaging (SPI) as a back-up. The recent ACC/AHA 2002 guidelines for chronic stable angina were our guide in choosing techniques.
8. Cardiac MRI. This will be done in suitable patients identified at this stage, i.e. 76 individuals without any target organ damage. This is mainly so that we have baseline data to be used later for Study 2.

Study 2: Does an elevated BNP in the absence of current ischaemia, LVH or LAD identify those who will later develop LVH or LAD?

Effectively, a similar study to Study 1 will be repeated in some of the same individuals four years later. The main analysis will be whether LVMI and LAD progress more over 4 years in those with high tercile BNPs than in those with low tercile BNPs when both groups are matched for their baseline LVMI and LAD. It is best when studying intraindividual changes in LVMI (or LAD) to use the more sensitive technique of MRI.

The prime aim of Study 2 is to see if a high BNP could identify those whose LV mass and/or whose LA volume will increase more in the next 4 years as detected by MRI. We shall also for completeness see if BNP also identifies those who will develop new (silent) coronary disease and stress echo will be undertaken. In addition, for completeness a delayed gadolinium enhancement on MRI will be added to the standard LV quantitative MRI assessment as a validated way of detecting old myocardial infarctions (MIs). These will be done in both the initial MR and the follow up MR but only in those patients taking part in Study 2.

Please use the following contact details to request a patient information sheet:
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Intervention Type
Other

Phase
Not Specified

Primary outcome(s)
Study 1: The spectrum of cardiac target organ damage seen in those with an elevated BNP level
Study 2: Proportion of participants with elevated BNP in the absence of ischaemia, LVH or LAD who develop LVH or LAD at four years

Key secondary outcome(s))
No secondary outcome measures

Completion date
31/12/2017

Eligibility

Key inclusion criteria
1. Both males and females, age >50
2. Treated hypertensive and/or hypercholestrolemic
3. Primary prevention only i.e. no known ischaemic heart disease, cerebrovascular disease, heart failure or peripheral vascular disease

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Sex
All

Key exclusion criteria
1. Renal impairment
2. Obvious cause for raised BNP level e.g., valvular disease or arrhythmias

Date of first enrolment
18/02/2008

Date of final enrolment
17/02/2013

Locations

Countries of recruitment
United Kingdom

Scotland

Study participating centre
Ninewells Hospital and Medical School
Dundee
United Kingdom
DD19SY

Sponsor information

Organisation
University of Dundee (UK)

ROR
https://ror.org/03h2bxq36

Funder(s)

Funder type

Charity

Funder Name
British Heart Foundation (UK)

Alternative Name(s)
The British Heart Foundation, the_bhf, BHF

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The data sharing plans for the current study are unknown and will be made available at a later date

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	11/09/2012		Yes	No
Participant information sheet	version V4	04/05/2016	29/08/2017	No	Yes
Participant information sheet	version V4	04/05/2016	29/08/2017	No	Yes