"Hart to Heart" Cardiovascular Disease in Women

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- Gender differences in risk factors:
  - Diabetes
  - Hypertension
  - Smoking
- Ischaemic heart disease in women
- Pregnancy complications & CV risk
- Spontaneous Coronary Artery Dissection (SCAD)
- Broken Heart Syndrome (Takotsubo)

Myth…..Women do not have heart disease, at least until after menopause

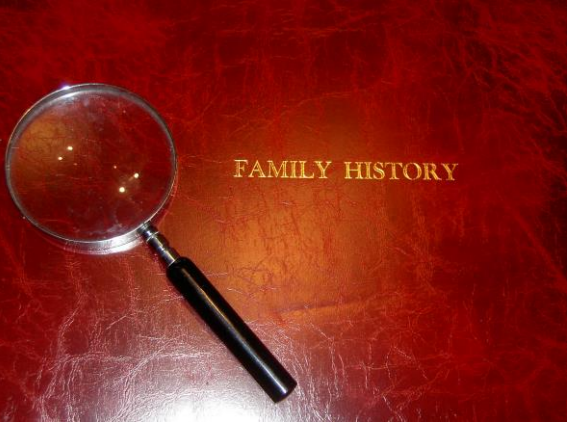
… Heart disease is a real threat to women at any age

Cardiovascular disease is not equal between men and women

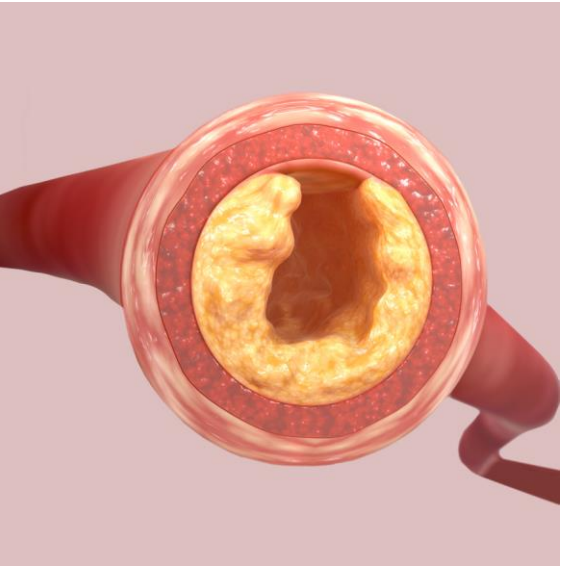
Gender Differences – Risk Factors

Men & women share traditional coronary risk factors

Some risk factors are **more prevalent** in women; impart a **greater magnitude of risk;** or are **unique** to women



Traditional Risk Factors



Diabetes

Females with diabetes have a 3x risk of MI compared with non-diabetic females

Diabetic females have **earlier MI & higher mortality** compared with diabetic males

Anything cardiovascular is approximately x2 as bad in the presence of diabetes

Hypertension

Oestrogen helps BP control premenopausal,

Higher prevalence in women >60 years age

Less well controlled in women than in men

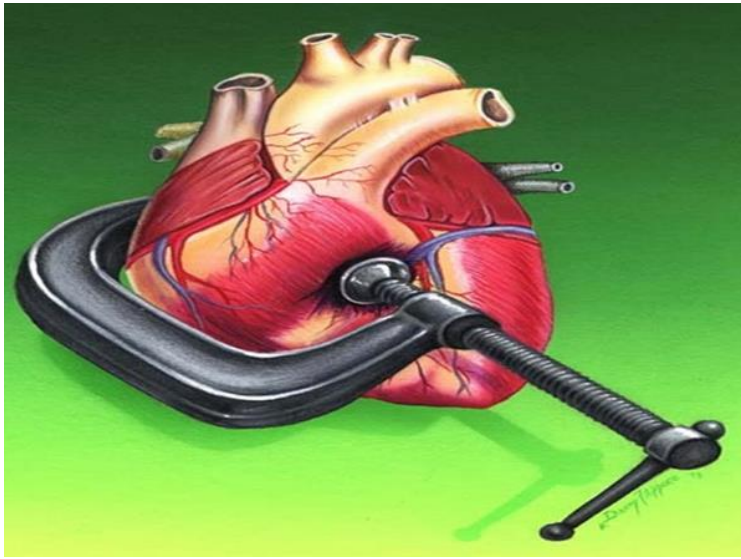
Know Your Blood Pressure

The ideal BP for most people is likely to be <120/75

CVD Risk Assessment & Management for Primary Care, 2018.

Lifestyle modification for BP ≥130/80 mmHg

If 5 year CVD risk ≥15% & BP ≥130/80 add drug treatment



Smoking

- Smoking negates the oestrogen protection from CAD in premenopausal women
- Nicotine is metabolized faster
- Female smokers compared to female non-smokers:
  - 3x more risk of an MI, & 19 years earlier

Females have a **25% higher risk** of heart disease compared to male smokers

If women smoke when they are on the pill they are 10x more likely to have a heart attack

(Heart Foundation NZ, 2022)

Menopause – A Risk Factor **Unique** to Women

- Premenopausal women are relatively protected against CVD, compared to age-matched men
- An independent risk factor
- Assoc. with onset of **diabetes** & **hypertension**

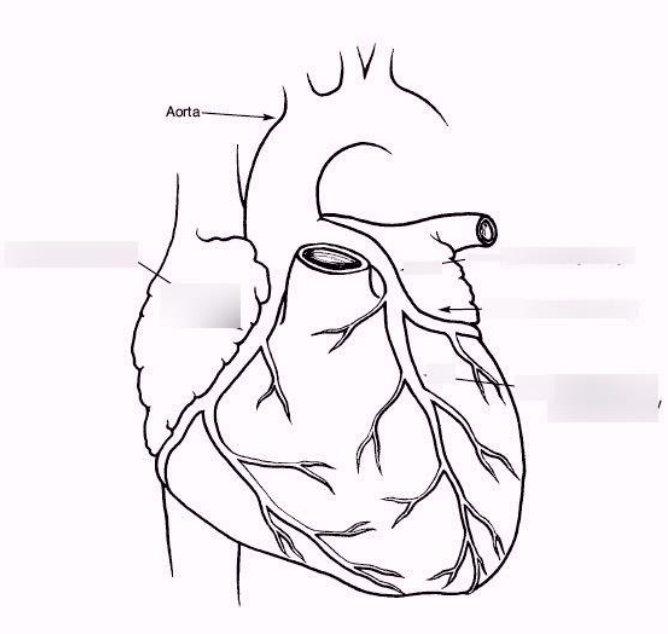
Early menopause (39 years or younger) and late menopause (56 years or older) increases CV risk

Menopause & Hormone Replacement Therapy (HRT)

HRT is not associated with reduced death or MI

HRT is not an effective agent for CV disease prevention

Ischaemic Heart Disease



Women may have different symptoms than men and this can make it more difficult to diagnose

Women experience more non-cardiac chest pain than men & often complain of chest pressure/tightness, SOB, palpitations, fatigue

Females & diabetics may present **atypically**!

5 symptoms higher in women

- Indigestion
- Palpitations
- Nausea
- Numbness in hands
- Unusual fatigue

Remember, these symptoms are considered ***'atypical'*** *as they vary from the typical male model and lead to* ***delayed diagnosis*** *&* ***delayed treatment***

Video

https://www.youtube.com/watch?v=_JI487DlgTA

Women delay before calling for help

- personal relevance
- competing priorities
- family responsibilities
- time constraints

Delayed presentation leads to **delayed diagnosis** which leads to **delayed management** which leads to **worse outcomes**

Women are often **under-diagnosed** & **under-treated – gender bias**

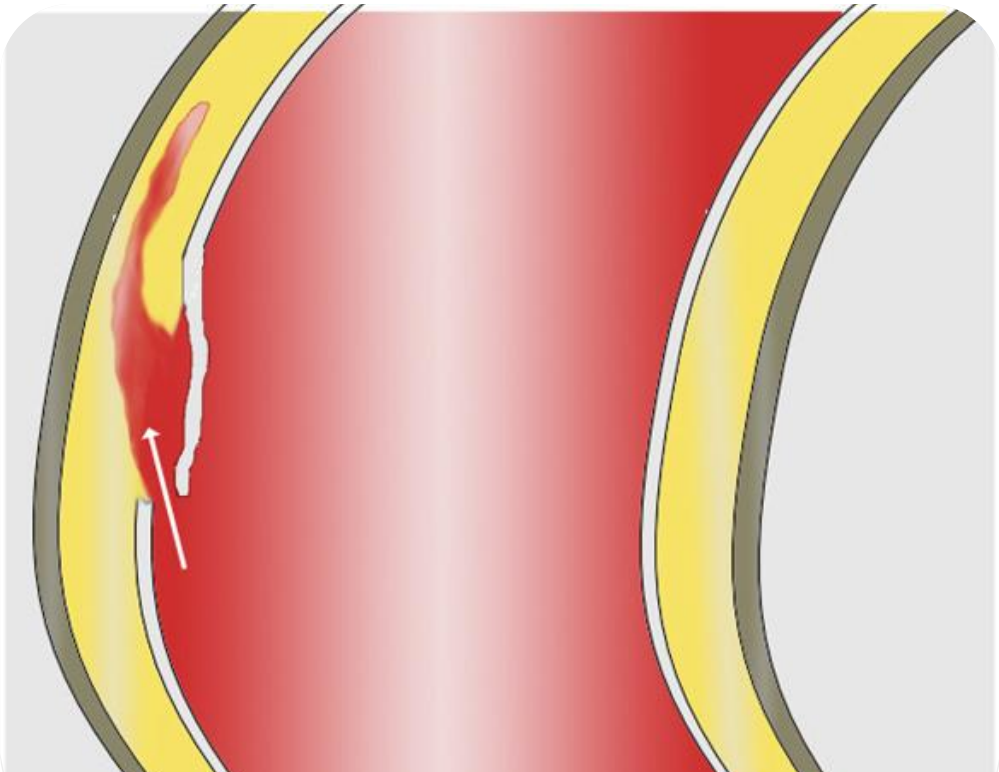
Pregnancy

- Risk factors for CVS events are predicted by:
  - Pre-eclampsia – **hypertensive disorders**
  - Pre-term delivery
  - Low birth weight
  - Still birth/miscarriage
  - Gestational diabetes

- CVS events occur prior to menopause

Pregnancy complications may serve as one of the earliest clinical markers of future CV disease in women

Spontaneous Coronary Artery Dissection (SCAD)

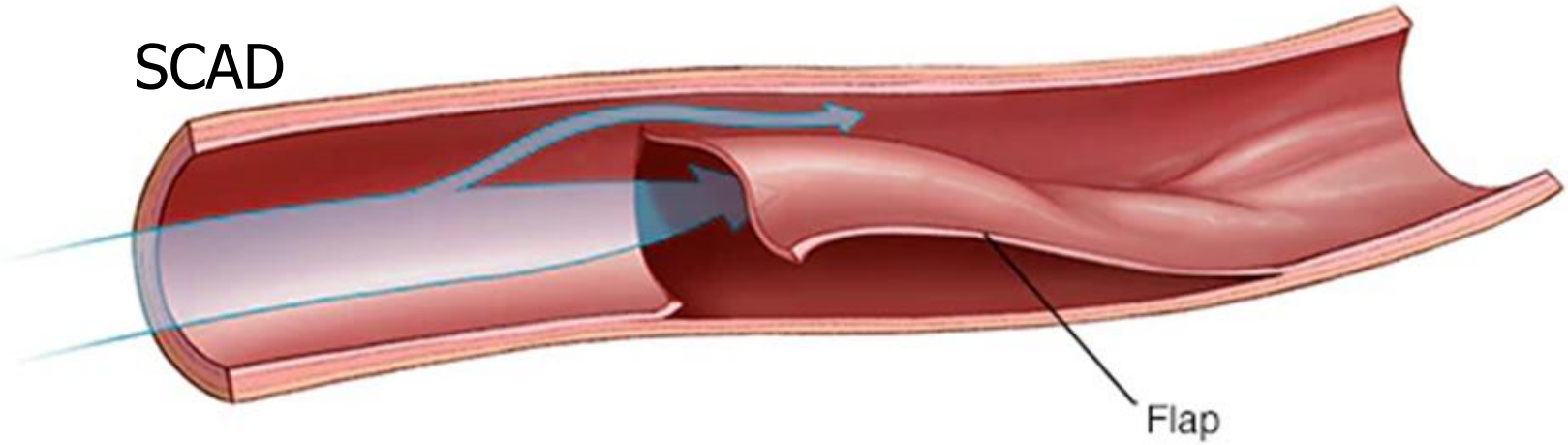


Dissection not occlusion

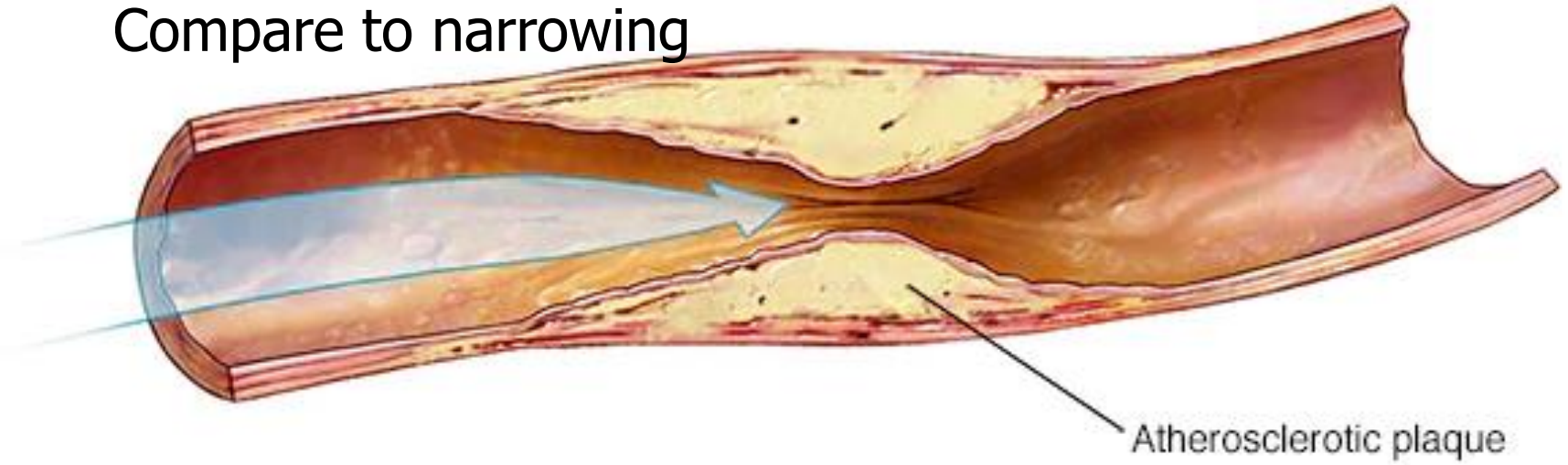
The coronary artery develops a tear, causing blood to flow between the layers which forces them apart

Non-atherosclerotic

SCAD



Compare to narrowing



Pathophysiology SCAD

Associated with:

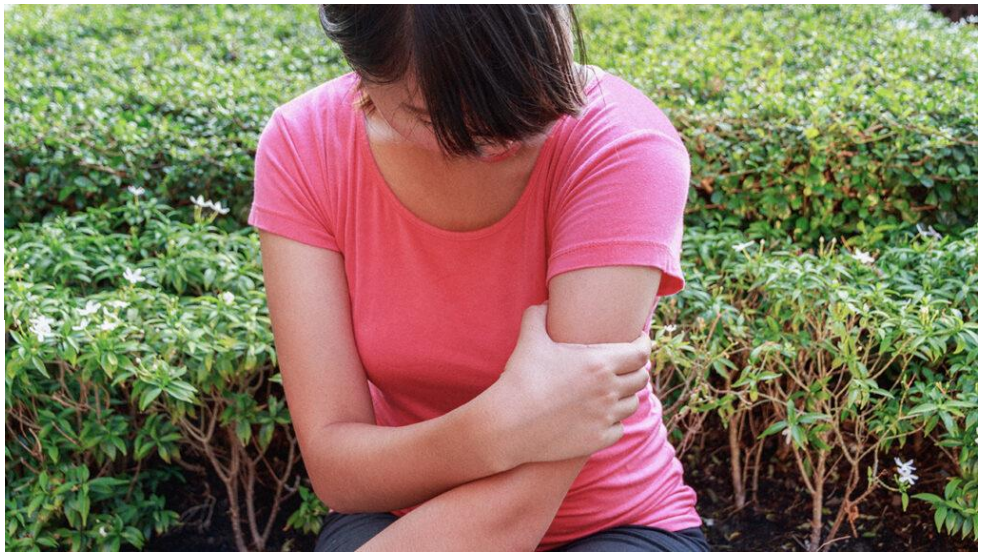
- **90% female**
- **Peripartum period**
- **Hypertension**
- 49% reported **emotional stress** prior
- 30% reported **physical stress** (lifting)

(European Society of Cardiology, 2018)

SCAD - Pregnancy is a Risk Factor

- 1/3 spontaneous coronary artery dissection cases are associated with **pregnancy**
  - 1/3 in late pregnancy
  - 2/3 in early puerperal period
  - Haemodynamic changes in pregnancy
- Increased **cardiac output**, increased **total blood volume** and **straining** & **shearing** forces during **labour** may result in increased wall stress
- Predisposes to intimal tears in the arterial wall & coronary artery dissections

Chest pain



Radiation to arm

Nausea & vomiting

I've got chest pain, do you think it is indigestion?

Is this SCAD?

Can I do an ECG?

Patient History is the Key

Hypertension

Pregnancy

Young females, healthy, thin, no risk factors

Emotional or physical stress

Spontaneous coronary artery dissection remains an unusual cause of acute coronary syndrome

It should be included in the **differential diagnosis** of acute myocardial infarction, especially when it affects **young, healthy females**

Broken Heart Syndrome

You can die of a broken heart!!

Takotsubo Cardiomyopathy

- Cardiovascular syndrome mimicking acute MI/ACS with ECG & enzyme changes
- Characterized by **transient, reversible LV dysfunction** with apical ballooning in pts without coronary artery disease
- Preceded by **emotional or physical stress**
- Complete recovery within **days - weeks**

Incidence & Pathophysiology

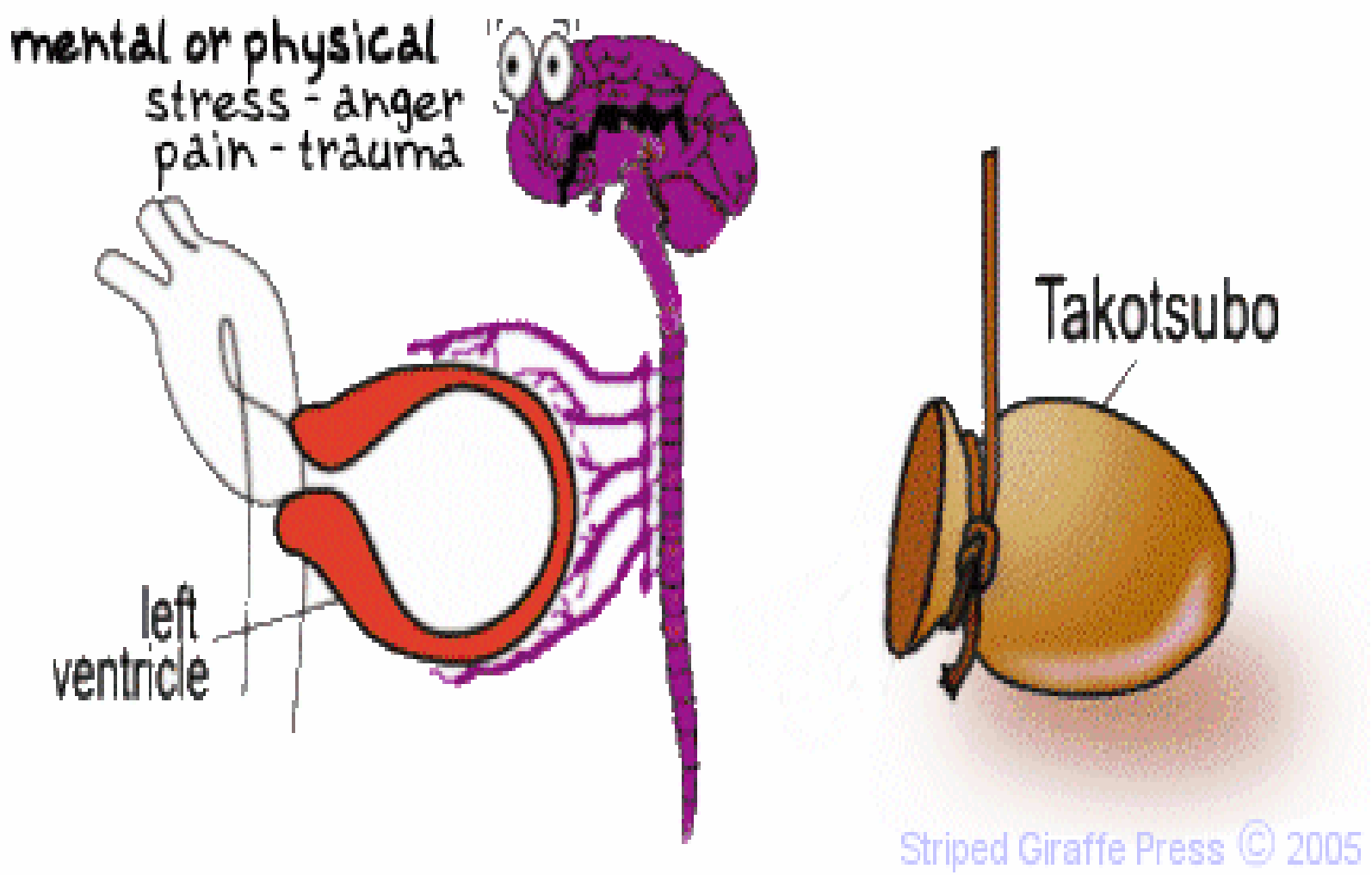
- **90%** are **female**
- Most frequently in women **>50yrs** of age (post-menopausal)
- **↓ oestrogen levels:**
  - ? cause alteration of endothelial function & ↑ susceptibility to multi-vessel coronary spasm
  - Myocyte injury and myocardial stunning

How does it get it's name?

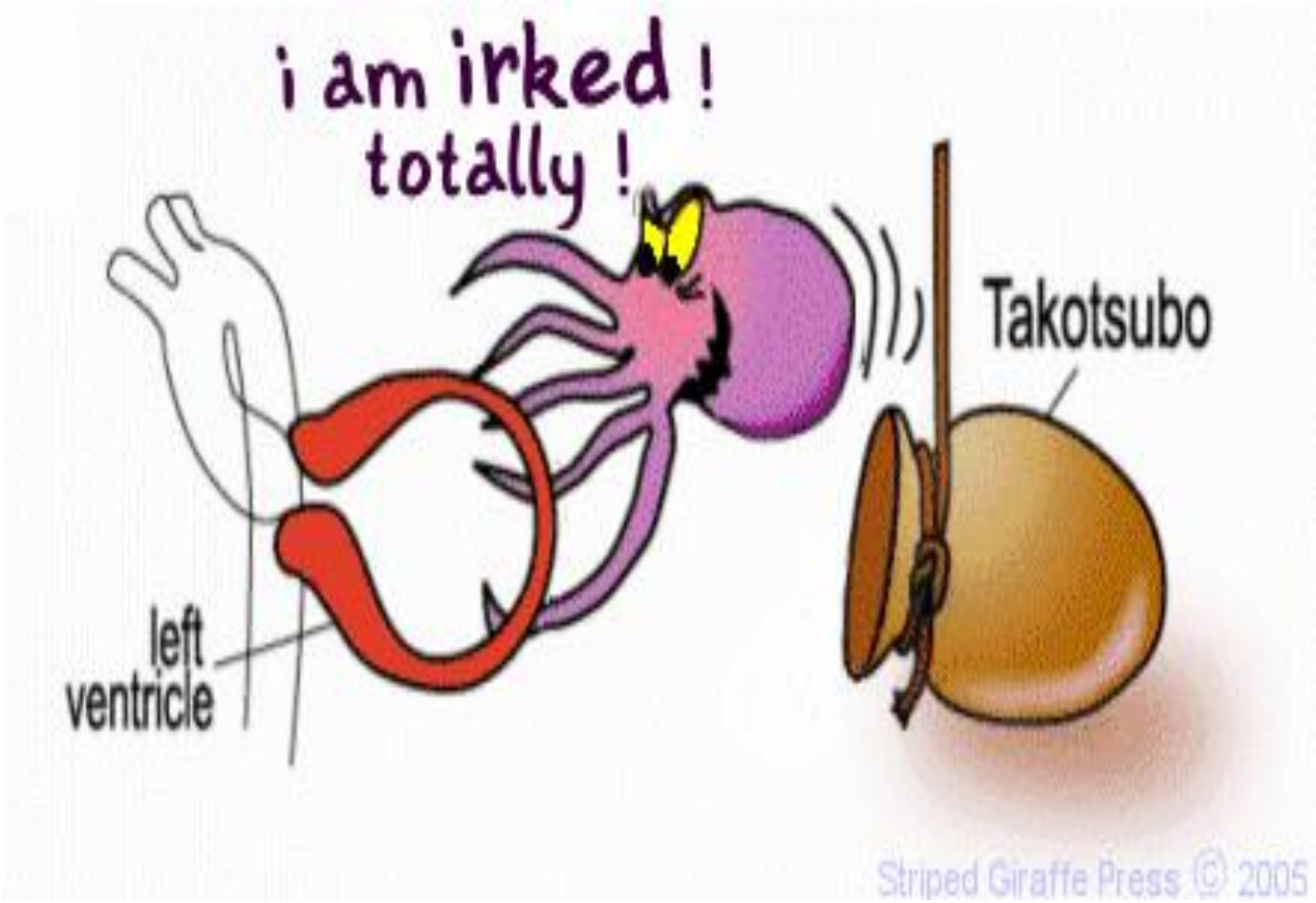
- The shape of the left ventricle during systole resembles a ***takotsubo*** – a Japanese fishing pot for trapping octopus
- The pot has a round bottom and narrow neck
- First described in Japan, 1991

Also known as apical ballooning syndrome

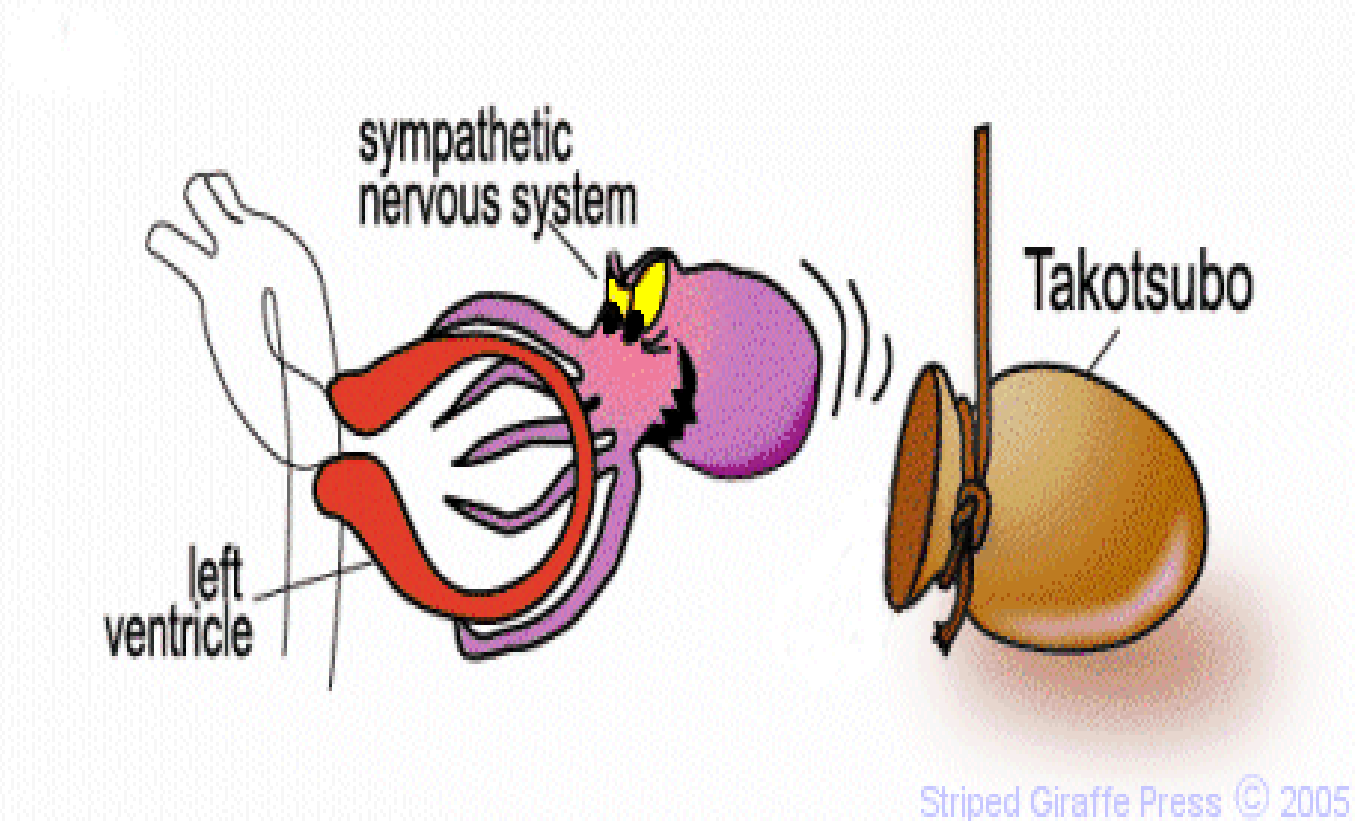
Central Nervous System Stressed



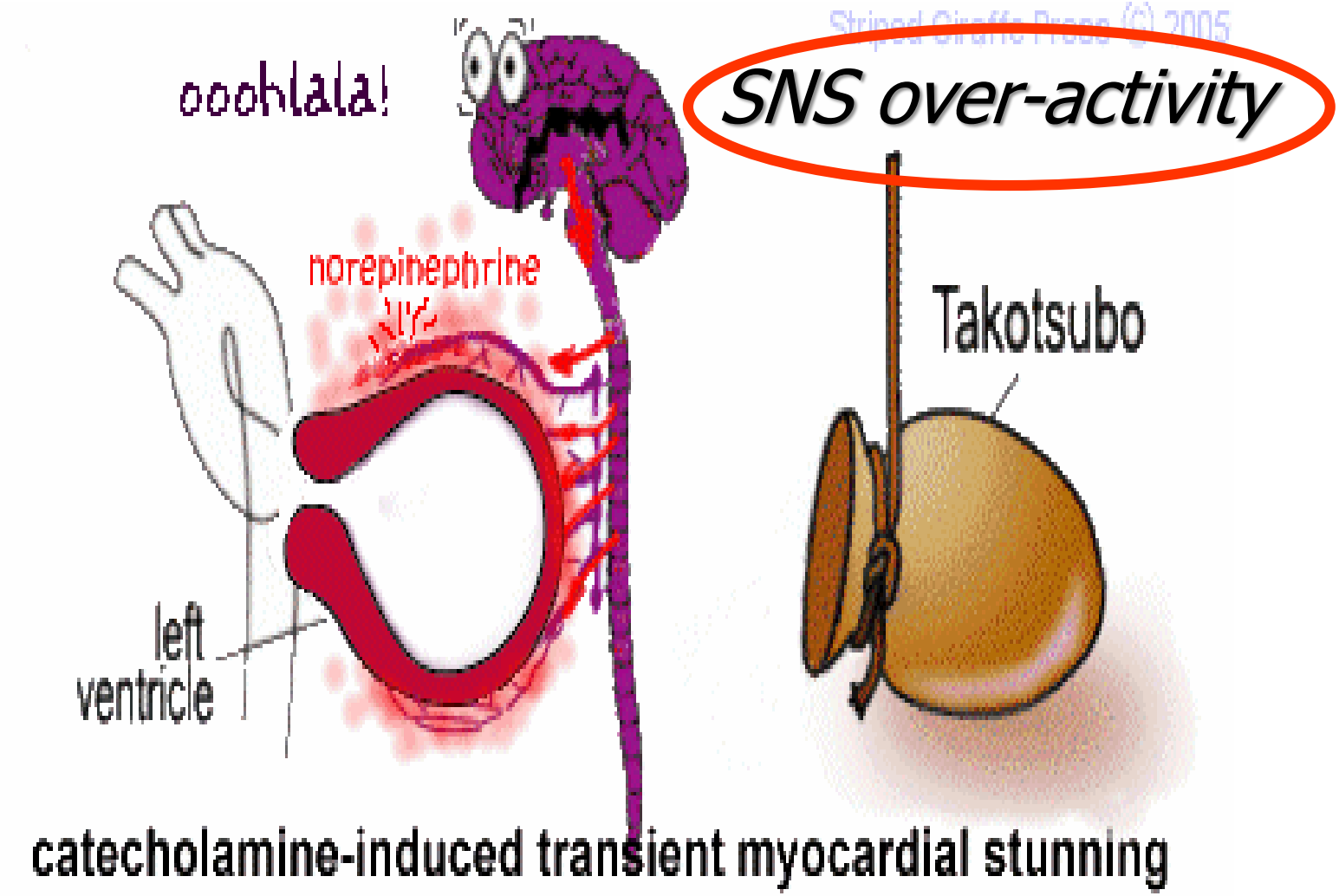
Octopus (SNS) unhappy & prowling



Octopus (the bully) has found its target – the heart



Sympathetic nervous system, releases large & disproportionate amounts of **catecholamines** (nor-adrenaline) creates chest pain, myocardial stunning, heart failure, or shock



Clinical Presentation

- Chest pain (67%)
- Dyspnoea (18%)
- ST elevation (81%)
- T wave abnormalities (64%)
- Q waves (31%)
- Mildly elevated enzymes (86%)
- Cardiogenic shock (4%)
- VF arrest (1.5%)

Symptom Onset Preceded by:

- **Emotional stress** (27% - 86%)
  - Death in family (human/pet)
  - Domestic incident
- **Physical stress** (38%)
  - Neurological, respiratory, metabolic, exhausting work
  - Cocaine or methamphetamine abuse
- Earthquake

Summary

CVD is different between men & women

Know your ‘at risk’ groups of population

Recognition of atypical symptoms is crucial

Know your own numbers

Know your own risk factors

Don’t smoke

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