ACUTE RHEUMATIC FEVER/ RHEUMATIC HEART DISEASE IN HONIARA

Dr Bardley Ludawane
Paediatrics registrar, NRH
DCH candidate, UPNG (2013)

Paediatrics Symposium, Lae, PNG, 05/09/13.

Background

- Acute rheumatic fever (ARF) is a multi-system auto-immune inflammatory disease that follows pharyngeal infection with the group A streptococcus
- Rheumatic heart disease (RHD) refers to the chronic changes of the valves of the heart following acute rheumatic fever.
- Globally, 15 million individuals are affected with RHD and more than 350,000 deaths annually
- Annual incidence of ARF in children age 5 to 14 yrs is around 350,000
- Disease of the poor – disappearing from the developed countries
- RHD in the Pacific is very common. For example; Nauru; 35/1000, Tuvalu; 45/1000
- Locally, it is not known

Aims

- To describe children presenting to National Referral Hospital (NRH) with ARF/RHD and their presenting features
- To determine the prevalence of RHD in school children through a screening program

Methodology

- Study design
  - Descriptive study with retrospective arm (Jan 2008 to Dec 2012) and prospective arm (Jan to June 2013) of patients presenting to the NRH
  - A cross-sectional study - school screening program in two schools in Honiara in April 2013
- Study Populations
  - Descriptive study: children admitted to NRH or reviewed at referral clinic for suspected ARF/RHD
  - Cross-sectional study: children in grades 3 to 9 at Mbua Valley and White River community schools

Methods con’t

- Data sources & collection
  - Retrospective arm
    - Children’s ward admission registries, cardiac registries and health books
  - Prospective arm
    - New patients presented to NRH with suspected ARF/RHD
    - Jones Criteria for ARF was used
  - Cross-sectional study
    - Screening of school children using portable echocardiographs were used and diagnosis were made according to World Heart Federation echo diagnostic criteria for RHD
  - Entered into questionnaire, excel and analysed

Results of Hospital Study

RESULTS		STUDY ARMS	
		RETROSPECTIVE	PROSPECTIVE
TOTAL NUMBER (PATIENTS) N = 68		50 (73 %)	18 (26 %)
GENDER	FEMALE	26 (52 %)	9 (50 %)
	MALE	24 (48 %)	9 (50 %)
MEDIAN AGE in years (IQR)		12 (10 – 14)	8 (7 – 12)
PRESENTING FEATURES	FEVER	18 (36 %)	17 (94 %)
	POLYARTHRITIS	17 (34 %)	15 (83 %)
	CARDITIS	15 (30 %)	15 (83 %)
	SYNDEHAMS CHOREA	1 (2 %)	3 (17 %)

Result of School Screening

TOTAL SCREENED	SCHOOL CHILDREN N=694
RHD CASES DETECTED	16
DEFINITE	8 (50 %)
BORDERLINE	8 (50 %)
PREVALENCE (estimated)	23 per 1000

Results con't

INVESTIGATIONS DONE	RETROSPECTIVE CASES (n=50)	PROSPECTIVE CASES (n=18)
ESR	8 (16 %)	13 (72%)
ECG	2 (4 %)	12 (67%)
ANTIDNASE	5 (10 %)	8 (44%)
ASOT	5 (10 %)	8 (44%)
ECHO	21 (42 %)	8 (44%)

Results cont

COMPLICATIONS	RETROSPECTIVE (n=50)	PROSPECTTIVE (n=18)
HEART FAILURE	16 (32 %)	3 (16 %)
INFECTIVE ENDOCARDITIS	1 (2 %)	1 (5 %)
DEATHS	3 (6 %)	1 (5 %)

Treatment

- Penicillin V for ARF
- Benzathine Penicillin G (BPG) as secondary prophylaxis
- 100% in the prospective group and those detected from the school screening
- ? Compliance

Discussion

- High prevalence of RHD
- ?prevalence of ARF
- National RHD registry is now in place
  - Improve case detection, documentation, follow-up (e.g. Compliance)
  - Better idea of burden
- Room to improve diagnosis in hospital/clinic setting
- National screening program
- Challenges: poor documentation, medical records system

Recommendation

- Community awareness of ARF/RHD
- Capacity building on ARF/RHD and echocardiograph training
- Screening of schools in the country for RHD
- Availability of treatment in health centres
- Follow-up

Conclusion

- Prevalence of RHD: 23/1000 - among the highest in the world
- Most common presenting symptoms are fever, polyarthritis and carditis. No data on treatment compliance
- First step in developing local knowledge and supporting national program for ARF/RHD

Acknowledgment

- Dr Titus Nasi – National Referral Hospital
- Dr Paulas Ripa – University of Papua New Guinea
- Dr Remi Subhi – University of Melbourne
- Prof Trevor Duke – Center for International Child health
- Elizabeth Kennedy/Menzies
- Echocardiograph screening team
- Staffs and students at Mbua Valley and White River Community Schools
- All the children included in this study report

REFERENCE

- Michael D Seckeler, Tracy R Hoke. *The worldwide epidemiology of acute rheumatic fever and rheumatic heart disease*: *clinical Epidemiology.* 2011; 3 67–84
- Andrew C Steer et al. *Acute rheumatic fever and rheumatic heart disease in Fiji: prospective surveillance, 2005–2007*
- Samantha M. Colquhoun et al. *Pilot study of nurseled rheumatic heart disease echocardiography screening in Fiji – a novel approach in a resource poor setting: Cardiology in the Young.* 2012; 1 – 7
- Bo Remenyl et al. *World Heart federation criteria for echocardiographic diagnosis of rheumatic heart disease-an evidence based guideline: Nature Reviews/Cardiology 2012; 9 297-309*
- Tackling rheumatic heart disease in Tuvalu: *Heart Beat/World Heart Federation June 2012*
- Rheumatic heart disease in Nauru: *Heart Beat/World Heart Federation December 2012*

TAGIO TUMAS

Echocardiographic criteria for individuals aged ≤20 years

Definite RHD (either A, B, C, or D):

A) Pathological MR and at least two morphological features of RHD of the MV
B) MS mean gradient ≥4 mmHg*
C) Pathological AR and at least two morphological features of RHD of the AV‡
D) Borderline disease of both the AV and MV§

Borderline RHD (either A, B, or C):

A) At least two morphological features of RHD of the MV without pathological MR or MS
B) Pathological MR
C) Pathological AR

Normal echocardiographic findings (all of A, B, C, and D);

A) MR that does not meet all four Doppler echocardiographic criteria (physiological MR)
B) AR that does not meet all four Doppler echocardiographic criteria (physiological AR)
C) An isolated morphological feature of RHD of the MV (e.g. valvular thickening) without any associated pathological stenosis or regurgitation
D) Morphological feature of RHD of the AV (e.g. valvular thickening) without any associated pathological stenosis or regurgitation

Echocardiographic criteria for pathological regurgitation

Pathological MR

(All 4 Doppler echocardiographic criteria must be met)

1. Seen in two views
2. In at least one view, jet length ≥2 cm‖
3. Velocity ≥3 m/s for one complete envelope
4. Pan-systolic jet in at least one envelope

Pathological AR

(All 4 Doppler echocardiographic criteria must be met)

1. Seen in two views
2. In at least one view, jet length ≥1 cm‖
3. Velocity ≥3 m/s in early diastole
4. Pan-diastolic jet in at least one envelope