An Introduction to RHD Diseases in Nepal

Prof. Dr. JN Pandey Himali
Supreme consultant physician General and Internal Medicine
Rheumatologist

Introduction:
Infectious rheumatism (IR) is a cause by beta hemolytic streptococcal infection oetiological based upon multi organ affection disease along of those, RHD is remain the most morbidity and mortality evidence specially infective cardiac rheumatic disease (IRHD) among the populations in between 3 to 35 years of age in both sex around the world.

History of HRD
The word HRD was created by Balconies in about 10 to 12 century after noticing fluid (rheuma) collection in article joint only in 19 century was established the fact that RHD can affect on heart, vessels, and organ system. The French Buzie (1835) and Russian Sokolski scientists draw attraction toward RD affection to heart than joint, so that HRD is also known as Stokowski Buzie Disease. Although RHD is belong to infectious disease but is these days it include as a systemic disease where it produce antigenic defensive mechanism in affected part and induce chronicity of its syndromal evidence which destroy functional activity of given organ system. Now a days 1.9-3.5% of world child population is affecting by RHD and in Nepal above 6yrs children RHD is increasing on yearly basis.

Causes of RHD:
In an ancient era it was assumed that RD can cause by virus as well as other organism, in now a days beta hemolytic streptococcus is remain the main causative bacterial microorganism is established which is easily can be isolated its evidence by laboratory finding. The main source of RHD is lay down to inflammation of the oral tonsil apparatus and its chronicity phage which fertilized and carry up 60-75% of RHD dissemination evidence and 80% of RHD
due to ENT pathology production. In about 5-13% of RHD due to the Scarlatti infection. The streptoglaluronidase, streptolysin-O, and –S and anti ASOT presence in blood analysis in patient with chronic tonsillitis and ENT diseases is the proof of RHD underlying fact. The state of identification of RHD is depends upon disease condition in about 45% in sever 13% moderate and 8.1% in mild stage of disease RHD expression can be determined. As in ancient time, now a days those scientist are came to overlook over viral evidence of RHD because its invasion depressed. Immune resistance mechanism in the organism, so that RHD causative agent can easily lay down into the tensile either other fertilized arias. Although some scientist believe that staphylococcus infection also can cause RHD. The predisposing factor of RHD can be cause and its quantitative and qualitative evaluation depend upon severity of RHD pathology. In this ways body biomechanical, bioorganic physical constituency, state of defensive mechanism, and the characteristic of microorganism is the determining factor for RHD evidence.

**RHD Condition in Nepal:**

*Nepal is a Geophysicalboundarily a small country in South Asia laying in between China and Indian peninsulas’ has its various climatic ecological environment variability. Where geostucturally can be divided into high Himalyan range (8828 – pick Everest), greenery high mountains, valleys and Terai regions. Accordingly with the earth level the temperature also varies from +50 dc to -50dc is variable round the year. Specially in Terai and mountain region morning, day, evening and night temperature and relative humidity is distinctly varies depending upon seasonal variation.*

*Also Nepal located in subtropical geo-climate region where accounted ataman, cold, winter, spring, dry and monsoon season that give vulnerability adaptation of body resistibility specially in childhood organism, which can cause seasonal frequent viral infection that reduce body resistibility in children specially below six year of age state of which can be favorable condition for RHD inoculation. so, Nepal belong to vulnerable country for RHD frequency. Where should have to paid for attention. In future RHD prevention initiation in nation world wise.*
Before writing by me a book “an introduction to IRHD in Nepal “there were lot of child, young and even old population was scattered throughout the country suffering from extra RHD pathology where medical practitioner even in hospital practice had been found to be enable about this RD pathology and many of those patience used to appeared to local traditional healer for help .When I opened Roma Advanced Polyclinic in center city Kathmandu .Those patients begin to be contracted with me. Tried to those routine through ASOT laboratory investigation that reveal of its positive reaction. Then was started its oetio-pathological therapy and those patients ultimately could find final result. That was the stimulus of that book publication. After this only 5 year latter of this Nepal Cardiac Centre was established focusing to RHD surgical management. For RHD surgical and Medical management and its prevention aspect till these days is carrying by me in my sphere of medical activities as being Chief Rheumatologist in the country.

**Methodology of RHD identification:**

RHD can repeatedly invasive acute and chronic disease in character the pathogen of which can be determined by following methodology:

1. Blood routine examination for ASOT which is the most effective and efficient test to find out the case.

2. Blood anti gialuronidase determination is also another most effective method can be used.

3. Heart cell defensive antibody determination is an immunological method which includes:
   a. Humeral immunity test.
   b. T- and B- lymphocytes determination test.
   c. Passive haemoglutination test.
   d. streptococcus skin reaction test.

4. Blood CRP testing method: It detects the activeness of the disease.
5. Blood mucopolysacharide test (disease activation test)

6. Protein electrophoresis test: it has its own important value due to low proportion of alb/gamag level in blood in active phase of disease where rise in alpha globulin and decrease in leucocytes and ESR in the blood.

7. Anamnysis, clinical examination and its finding remain the basic element for complete diagnosis of RHD.

8. Echocardio-ultrasonology can be used as to determined the morphologic valvular structure study for RHD

9. Electro cardio gram can also remain to determine cardiac functional and conductive wave for RHD.

10. Roentrological examination also a basic and traditional method of RHD investigation.

**Signs and symptoms of RHD:**

Those sign and symptoms are the proper medium for IRHD diagnosis, the blood laboratory investigation is the another tool for its diagnosis:

A) Main signs:
   i. Cardiac internal as well as internal valvular inflammation.
   ii. Two or more joints inflammation leading to althralgia sign.
   iii. Rheumatic chorea.
   iv. Intradermal nodular or nodes deformities.
   v. Skin erythematous inflammatory process.
   vi. Past history of rheumatism.
   vii. Efficacy of IRHD therapy.

B) Additional symptoms of IRHD:
   i. Simple in nature: rise in body temperature, lassitude, fatigue, irritability, pale skin coloration, blood press variation, excessive sweating, nasal bleeding, abdominal pain etc.
   ii. Blood C-reactive protein and ESR elevation.
Cardiac morphology in IRHD:

The main morphological pathology disorder can be noticed in endocardial vascular structure elements similar effect that of myocardial and pericardial surface ring forming granulomas in valvar leaflets apparatus which sedimentation is caused hernias which is the ultimate functional inefficiency in tertiary period that appeared in third month of IRHD inoculation that cause decrease elasticity of pericardia and endocardia which may give rise to proved morphological changing characteristics.

IRHD clinical state analysis:

A. According to the severity of symptomatology IRHD is divided into:
   Acute: state I,II,III;       Chronic state:   Latent state:
B. According to the pathological characteristics:
   i. Heart: a-IRHD where no pathological evidence is seen in cardiac Valvar apparatus:
      b-Appearance of pathologic evidence in valvar apparatus. 
      c-Noticable adriac muscles pathologic evidence involvement. 
      d- Prominent cardiac pathological evidence noticed in valvar apparatus.
   ii. Exta cardiac organs and systems:
      a-Polyarteritis,serositis,pluritis,peritonitis,abdominal syndrome.
      b- Rheumatic chorea,encephalitis,meningoencephalitis,cerebral vasculitis,neuropsychotic disorder,systemicvasculitis,nephritis hepatitis,pheumonias,skin irruption and inflammation,uveitis thyroiditis and other extra cardiac organ IRHD pathologies.
C. According to the course of IRHD:
   i. Acute     ii. Moderate     iii. Mild     Latent     iv. Relapsing
D. According to the heamodynamic relation:
   i. No heamodynamic disorder noted.
   ii. Heamodynamic disorder I II III stages notified
These are the fundamental basis in upon which base can be set proper IRHD diagnosis and treatment.

**IRHD severity finding methodology:**

1. **Sever stage III** – where can find following symptoms:-
   A. Pancreatitis, myocarditis, cardioartculitis, pleuritis, pneumonia, hepatitis, rheumatic polyarthritus.
   B. Loss of cardiac elasticity, cardiomegaly by x-ray evidence.
   C. Increase PQ interval, extrasystol and palpitation by ECG evidence.
   D. Blood evidence:- Neutrophillia, leucositosis 10-10’3 in/ml or more, ESR 30-40mm/hr, C-reactive protein 3-4 plus, fibrinogen 0.8-1, Alpha globulin 13-14% seromucoid indicator 0.2-16.

2. **Moderate stage II**: can find following syndromes:
   A. Moderate cardiac and articular inflammation, Sedenham’s chorea, subdermal nodules, skin erythema.
   B. X-ray chest - cardiac structural moderate changes.
   C. ECG – increase pq interval, palpitation, arteritis.
   D. Blood analysis - leucositosis 10 gm/l, C-reactive protein 1-2 plus, ESR 20-30mm, globulin 22-25%

3. **Mild stage I**: can find following symptomatology:
   A. Frequent appearing symptoms relapsing cardites, inefficiency of therapy, chorea, meningitis, vasculitis, subdermal nodules, dermatitis and polyarthritus etc.
   B. Chest x-ray: mild in picture.
   C. ECG : evidence: Depends upon severity of symptoms and organ pathology.
   D. Blood analysis: Not specific.

**IRD is a multiorgan pathology which symptoms depends upon organ pathology in general Cardiac) as well as in complex (extra cardiac).**

A. Cardiac: Pericarditis, rheumaticae, myocarditis rheumaticae, Endocarditis rheumaticae.
B. Extra cardiac organs:
i. Poly arthritis reumaticae
ii. Pulmonary rheumaticae
iii. Rheumatism Hepaticae
iv. ,, ,, thyroidicae
v. ,, ,, pancreaticae
vi. ,, ,, gonadicae
vii. ,, ,, Neuroticae
viii. Serositis rheumaticae
ix. Rheumatism nephroticae.
x. Rheumatism leneinicae
xi. ,, angioneuroticae
xii. Musculoskelatal rheumatism
xii. Rheumaticae ocularis
xiii. Other rheumatic form.

**Incubation period:**

In IRHD incubation period is determine 1.5-2.5 m and even 3-5 m even prolong. The first stage symptoms can be noticed 2-3 week after tonsillitis, where fever, fatigue, lassitude, palpitation, heaviness of left heart site, chest pain, breathlessness, pale skin and sweating etc. By auscultation noticeable cardiac conduction signs not recorded, a little laboratory declination can be find.

**IRHD diagnosis:**

The most difficult to set the diagnosis in initial stage is due to its complexity of symptomatic appearance and similar confusing with other disease symptomatology. The vulnerable age group is 5-9 yrs of age (as we recorded in Kanti children Hospital Kathmandu Nepal) and latently affecting upon cardiac organ system make its diagnosis more difficult. So as to be clear for IRHD inoculation in initial state of tonsillitis in each early age baby should undergo blood serum test for ASOT lab finding for IRHD determination. In modern medical era echocardiogram investigation remain the most determine technique for valvar pathology in this. Those totality of cardiac symptom complex can assume to set IRHD diagnosis.

**Defensive system in IRHD:**

1. Autoagressive antigen
2. B-and T- lymphocyte
3. Phagocyte activity
4. Compliment & lysosome activation factor

**Differential diagnosis:**
Tuberculosis, tonsillitis, sinusitis, cholecystitis, ptelitis, thyroiditis, systemic cardiac diseases

Prognosis:-

IRD can invade in different organ and system in accordingly determined prognostic of disease. We have more concern about IRHD, So the stage & state of disease course and phase shall determine. Life state in initial stage of IRHD the whose central and peripheral cardiovascular system can be affected where the immune relatively play major role in it. While, the body relatively decrease reciprocally the cardiovascular apparatus deformities can manifested. In non relapsing IRHD patient with valvular pathology can survive decades. The lethal state in acute IRHD revealed 1-4% in total cases. Due to modern medicinal and medico-technological development lot of thing can be done for IRHD lethal prevention and care.

What I observed in my clinical practice in Nepal that the IHRD invasion can be possible due to fluctuation of atmospheric temperature due to geo-climatic and seasonal variation in the country. The morning, day, evening, and night temperature varies around the year in accordance with the seasonal nature which definitely pressurize upon the body resistibility in childhood. Due to the lack knowledge ignorance and poverty of maternal handling of a child from the birth and their growing period may suffer frequently tonsillitis viral infection like common cold, influenza, which make flexibility of body immune mechanism at the time this opportunistic streptococcus can inoculate in to the tonsillar apparatus and ultimately disseminate through lymph and haemato-circulatory system and localize in to valvular apparatus of the heart. Generally, mother in sleep leave the baby aside during sleep while the baby through by legs their cover clothes and winter season they affect cold. The main children mortality is seems that lack of maintaining body temperature is the causative factor for upper respiratory infection is directly proportional to IRHD manifestation. Though the age of IRHD inoculation is from 2-5 years and the symptoms may manifest time to time but due to illiteracy medical management system in the country, parents brings this child in referral hospital in the age about 9-10 of child age where the case already
in compensation stage, if that patient did not get in time surgical intervention at the age of 16-17 lethal incident is the result.

**Disability:**

In Nepal there is no any social security system so such patients remain at their home, work also and die in certainly. Very less those population can get their life by approaching in time to the need place.

**IRHD therapy:**

Generally there are 5 type of therapy in the complex treatment system is recognized.

A. Medical:
   1. Antibacterial treatment
   2. Anti-inflammatory treatment
   3. Pathological treatment
   4. Simulative treatment
   5. Physiotherapeutic treatment
   6. Senatorial treatment

B. Surgical treatment: - Valvar repairmen

**Prevention:**

1. Routine health check up in case of chronic tonsillitis in schooling children’s
2. Blood ASOT determination in laboratory set up.
3. To give therapy if it appear.
4. Follow up check up in suspected cases.
5. To develop Beta hemolytic streptococcus vaccine and its application whole over the world would remain the main task for IRHD prevention activity in future. I hope this will lead by RHD foundation in future.

**Conclusion:**

As other disease pathology IRHD is also a complex and troublesome lethal disease. In one glance, it seems that it is a simple disease, but it is not such. It is a
very complex disease due to its invasive than after destroying capacity in various organs. As such a raw iron can’t perform its function, in the same way if a certain organ affected by IRHD than whole body can’t function properly than his earning capacity lowdown.

RD revealed in differ varieties according to their symptomatic characteristics. Some of them belong to autoimmune disorder, aseptic oriented and some of aseptic. Septic RD can be completely treated if it is diagnosed in time. Even in terminal RD stage of it, in time started oetiotropic treatment. The life span of a patient can be prolong. But in case of aseptic RD recurrent can be found in frequent.

In early stage RD mask as a common cold and influenza so that all most parents do not pay serious attention about their children that’s simple antipyretic can suppress the sickness. While the bacteria can penetrate in to internal organ and system. If we can find out such patient in initial stage then the case absolutely treated, if not so done that pathogen sediment in its favorable organ system then damage whole the body leading to morbidly stage.

Any type of RD can relapse and aggravate in cold season, while the symptom revealed something strong than the disease may remain acute. RD can appeared accordingly to seasonal relapsing character where some of them can be repeated in multiple and some of may be constant invasive symptomatic. so, it is better to conduct ARD therapy but we have not persist such civilized practice.

RD relapse specially in winter season than dry season, So that such patient likely need to adopt such climatic condition. If it is so done the diseases can almost for this purpose of rehabilitation such patient need to suggest to have such sanatoria treatment. In Nepal has multi-climatic facility, but due to the inability of health system policy and management makers such thing could not be grown up.

According to our research finding RD infection is found in high altitude region then Terrain belt. Due to the poverty and lack of knowledge, in cold season, in the high altitude inhabitant child population along with RD infestation opportunistic infection may lay down and frequently suffering from chest
infection (90%) and die, the survivors suffered from sinusitis, otitis media, mininzitics and other.

In village site people thought RD can affect only in the joint and have not idea of its affection in the heart. When the baby sick by RHD they try to treat with local healer then baby may loss life. Such is happening in day to day life.

**Recommendation:**

Now a days, RHD seems to be not so far danger disease due to cardiothoracic surgical advancement. But this procedure still seemed to be expensive and not reachable to total population. Any how emphasis should be given upon its prevention through health education. I here by encouraged to develop beta hemolytic anti streptococcus vaccine which would remain the best wings of RHD prevention methodology around the world. Thanks
Reference

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