Acute Respiratory Infection (ARI)

Dr. Nadhim Ghazal

- In children under 5 years ARI, diarrheal disease& malnutrition are the principle causes of illness & death in developing countries.

  ARI is an abbreviation of the world ARI, the WHO has defined ARI as an acute infection of the ear lasting less than 14 days, nose, throat, larynx, trachea, bronchi, bronchioles or lung with or without cough lasting less than 30 days.

- **Classification:**
- There are different ways of classifying ARI which is a complex group of clinical condition of different aetiology & severity.
- According to who ARI can simply classified according to:

1- Site of infection:

- Acute upper respiratory infection (AURI) this group include:

a) Cold & its complications.

b) Otitis media& its complications.

c) Pharyngitis & its complications.

- Acute lower respiratory infection (ALRI) this group include:

a) Epiglotitis, laryngitis, laryngeotracheitis (these conditions causing stridor).

b) Bronchitis, bronchiolitis, pneumonia, asthma.

c) Complications of other diseases related to ALRI as measles, pertussis, diphtheria.

d) Chronic cough &its causes as asthma, T.B & pertussis.

2- Aetiological agent:

a) ARI ofviral origin: rhino viruses, adeno viruses, entero virus, influenza & parainfluenza viruses, coxackie viruses , respiratory syncytial viruses.

b) ARI of bacterial origin: strept. pneumonia , H. influenza, diphtheria, bordetlla pertussis.

3- Severity of infection:

- WHO has adapted a simple decision- action based classification of ARI this classification can be summarized as:

a) Cough &cold (no pneumonia).

b) Pneumonia.

c) Sever pneumonia.

d) Very severe disease.

- this simplified process uses the smallest number of clinical signs &symptoms for the classification of the child illness, where the recognition of pneumonia is based on 2 clinical signs:

1) **Fast breathing:** It's defined as 60 breath per minute or more in young infants (age less than 2months).50 breaths / minute or more in children (2months -12months). 40 breaths/minute or more in children (12months -5years).
2) **Indrawing of the chest wall due the inside pull of the intercostal muscles.**

- **Investigations of ARI:**
- By lung aspirate and blood culture but due to the difficulty of getting lung aspirate in children most of the studies are done post mortem. It was found that 2/3 of lung aspirate done post mortem are +ve i.e. containing ARI microorganisms like staph.

- **Risk factors:**

1) **Age:** children less than one year of age are at high risk to have numerous as well as sever ARI.
2) **Low birth weight:** it's effect continues up to 2 years.
3) **Bottle feeding:** prone to sever ARI.
4) **Inadequate availability of health facilities:** no immunization, unavailability of antibiotics& poor education of the mother.
5) **Housing conditions:** which include:

a) Indoor air pollution from fuel, bio fuel is most polluting, also the gas used for heating and cooking.
b) Presence of animals in doors as seen in rural areas especially in winter.
c) Smoking habits of the parents and other family members.

- **Epidemiology of ARI:**
- ARI kills about 4 million children under 5years of age every year, 3million of those die due to pneumonia. The other million die due to different from of ARI especially measles and whooping cough. Mortality rate is 60-70 times higher in developing countries.
- Each child suffers 4-8 episodes of ARI every year with duration of 7-9 days in both developing and developed countries(morbidity is the same everywhere).

- In developing countries 40-60 % of health consultation in under 5 years children is attributed to ARI, and 30 - 40% of hospital admissions is also due to ARI.
- In developed countries 20% of medical consultation for children are attributed to ARI as well as 75% of prescribed antibiotics to under 5 children still the majority of these cases are viral infections. In developing countries otitis media is the leading cause of preventable deafness.
- Streptococcal pharyngitis is an important cause of rheumatic fever and nephrotic syndrome.
- Seasonal variations; there is an increase in incidence during the cold season, exposure to cold weather is not the cause for this increase, It’s mainly due to crowding in poorly ventilated rooms.

Control Strategies of ARI

- Programs are part of any health system, therefore it's international program, such program is operative in many developing countries it include:

1) Case management.
2) Health education.
3) Immunization.
4) DPT and recently DPT + hepatitis + H. influenza B vaccines in developed countries.

- By using WHO guidelines mortality of pneumonia has reduced by 55%.

- **Standard case management of ARI**
- **Young infant (age less than 2 months):**
- **Signs:**
- Stopped feeding well, Convulsions, Abnormally sleepy or difficult to wake, Stridor in calm child, Wheezing or Fever or low body temperature (fever > 38 C° need antipyretics).
- Classify as**: "Very Sever Disease:**
- **Treatment:**

a) Refer urgently to hospital.
b) Keep young infant warm.
c) Give first dose of an antibiotic (to avoid the delay of bringing infant to the hospital).

- **Signs:**
- Sever chest indrawing or Fast breathing (60 per minute or more).
- Classify as**: "Sever Pneumonia"**
- **Treatment:**

a) Refer urgently to hospital.

b) Keep young infant warm.

c) Give first dose of antibiotics if referral isn't feasible treat with antibiotics and follow closely.

- **Signs:**
- No sever chest indrawing and No fast breathing (less than 60/min).
- Classify as: “**no pneumonia (cough or cold)”**
- **Treatment:**

Advise the mother to get the following home care:

a) Keep young infant warm.
b) Breast-feeding frequently.
c) Clear nose if it interferes with feeding .

- Return quickly if:

a) Breathing become difficult or fast.
b) Feeding becomes a problem.
c) Young infants become sicker.

- **The child age 2 months up to 5 years:**
- **Signs:**
- Not able to drink, Convulsions, Abnormally sleepy or difficult to wake, Stridor in calm child or sever malnutrition.
- Classify as: "**Very Sever Disease"**
- **Treatment:**

a) Refer urgently to hospital.
b) Give first dose of antibiotics.
c) Treat fever if present, if temperature 38-39 give more fluid, if it reach 39 and more give antipyretic.
d) Treat wheezing if present.

- **Signs:**
- Chest indrawing and Fast breathing (60/min or more).
- Classify as: **“Sever Pneumonia”**
- **Treatment:** (as in severe pneumonia in young infant)
- **Signs:**
- No chest indrawing and Fast breathing (50 or more), (40 or more).
- Classify as: **“Pneumonia”**
- **Treatment:**

a) Advise mother to give home care.
b) Give antibiotics (oral).
c) Treat fever if present.
d) Advise mother to return child within 2 days for reassessment or earlier if the child is getting worse.

- **Signs:**
- No chest indrawing and No fast breathing (less than 50),(less than 40).
- Classify as:**“no pneumonia(cough or cold)”**
- **Treatment:**

a) If coughing more than 30 days refer for assessment.

b) Assess and treat ear problem or sore throat if present (URI).

c) Assess and treat other problems.

d) Advise mother to give home care.

e) Treat fever if present > 39 C° give antipyretics.

- **Advise mother to give home care (for a child age 2 months -5 years):**
- Feed the child, Feed the child during illness, Increase feeding after illness, Clear the nose if it interferes with feeding, Increase fluids, offer the child extra to drink and Increase breast feeding.

- **Re assess in 2 days child who is taking an antibiotic for pneumonia:**
- **Signs:**
- **Get worse:** not able to drink, has chest indrawing or has other danger signs. In this case we refer urgently to hospital.
- **Remain the same:** In this case we change the antibiotic or refer.
- **Improving:** breathing slower, less fever & eating better. In this case we finish 5 days of antibiotics.
- **Treatment:**

Give an antibiotic:

a) Give the first dose in the clinic.

b) Instruct the mother in home to give the antibiotic for 5 days.

Antibiotics: Cotrimoxazole, Amoxicillin, Ampicillin or procain penicillin.

END