Review of literature

The very first record of a case of probable dengue viral fever is in a Chinese medical encyclopedia from the Jin Dynasty (265–420 AD) which described a "water poison" linked with flying insects. The primary vector, A. aegypti, spread out of Africa in the 15th - 19th centuries due in part to increased globalization.

There have been representation of epidemics in the 17th century, but the most possible early reports of dengue epidemics are from 1779 and 1780, when an epidemic swept across Asia, Africa and also North America. From that time until 1940, epidemics were infrequent. The first clinically recognized dengue epidemics occurred almost simultaneously in Asia, Africa, and also North America in the 1780s.

The very first clinical case report dates from 1789 of the 1780 epidemic in Philadelphia is by Benjamin Rush, who introduced the term “break bone fever” because of the symptoms of myalgia and arthralgia. The dengue fever term came into general use only after 1828.

In 1906, transmission by the Aedes female mosquitoes was confirmed, and in 1907 dengue was the second disease (after yellow fever) that was shown to be caused by a virus. Further investigations by John Burton Cleland and Joseph Franklin Siler completed the basic understanding of dengue virus transmission.

The marked spread of dengue during and also after the Second World War has been attributed to ecologic disruption. The similar trends also led to the spread of different serotypes of the disease to other areas, and to the emergence of dengue hemorrhagic fever. This severe form of the disease was first reported in the Philippines (1953); by the 1970s, it had become a major cause of child mortality and had emerged in the Pacific and with the Americas.

Dengue hemorrhagic fever and dengue shock syndrome were first noted in Central America in 1981, as DENV-2 was contracted by those people who had previously been infected with DENV-1 several years earlier.

The first isolation of dengue virus in India occurred Calcutta city in 1945–46. India's first dengue fever epidemic was reported in 1963–64, when dengue dominantly spread from the country's southern regions to its northern states and progressively to the whole country by 1968. Since...
then, India has experienced extensive dengue epidemics each followed by endemic/hyper-endemic years, with a shift in dengue epidemiology in 1996 introducing the first major epidemic of DHF/DSS. Trends in recent decades indicate that larger and more frequent dengue outbreaks are occurring, with geographic expansion to new states, and spread of dengue to peri-urban and rural areas, in addition to increased case severity and deaths, and progression to hyper-endemicity.

Dengue is endemic in both urban and semi urban areas of India and was first isolated in India in 1945.

Evidence of the dengue virus in the Americas can be traced back to 1953 when DEN-2 was isolated (Anderson et al. 1956); DEN-1 appeared in 1977 and DEN-4 in 1981 (Gubler 1997, Pinheiro & Corber 1997).

DEN-3 was introduced in 1963 and the last isolation took place in 1977-1978 in Puerto Rico and Colombia (Pinheiro & Corber 1997).

After 17 years of its apparent disappearance in the Americas, DEN-3 re-appeared in 1994 in Nicaragua and Panama and later in Mexico and the Caribbean countries (CDC 1995).

WHO 2009 classification divides dengue fever into two groups: uncomplicated and severe, though the 1997 WHO classification is still widely used. The 1997 classification divided dengue into undifferentiated fever, dengue fever (DF), and dengue haemorrhagic fever (DHF).

In 2000, Brazil and Venezuela reported the re-introduction of this serotype in South America (Nogueira et al. 2001, Uzcategui et al. 2003).

Gbibbon et al. (2007):- 1.2% total dengue admission in a tertiary care centre in Thailand over a period of 11 years were found to be repeat infection. They also reported that this prevalence was 0.5% over the previous 15 years. This observation suggests that incidence of repeat dengue infection is increasing throughout the world.

Chuansumrit et al. (2008):- They also showed that positive rates for NS1 antigen were 100% on day 2, 92% on day 3, 76.9% on day 4, 56.6% on day of fever, and declined to 43% on day 6 with defervescence and 29.8% on day 7 while positive rate of Ig M antibodies were in reverse proportion to those of NS1 antigen.
**Cecilia D et al. (2009):** Since the 1990s the occurrence of DHF has gradually increased. The increase has been attributed to changes in virus lineage especially with regard to DENV-2 and DENV-3. DENV-1 has been allied with dengue fever (DF) outbreaks and DENV-4 reports have been rare. The emergence of DENV-4 was reported in 2003 in Delhi and in 2007 in Hyderabad. The last report of DENV-4 from Maharashtra. They report on the detection of this DENV-4 in Pune, Maharashtra after an absence of almost 30 years. Two dengue cases were detected in 2009-10, serotyped by multiplex reverse transcriptase polymerase chain reaction (RT-PCR). Both the cases were detected as very severe dengue (Category 3) requiring intensive care unit (ICU) level of treatment. Deciding on the hemagglutination inhibiting (HI) antibody titres the 2009 case was characterized as a primary dengue infection and the 2010 case as a secondary dengue infection. Both the cases presented plasma leakage and neither showed any type of haemorrhage. The 2009 case survived while the 2010 case was fatal [63].

**Chakravati et al (2011):** They were of the view that combined use of NS-1 antigen based assay with antibody detection helps in detection of positive cases more efficiently [51].

**Nazia Afreen, et al (2013):** Molecular detection and serotyping of dengue viruses were carried out on acute phase blood samples that were collected during 2013 dengue fever outbreak from main Delhi city. Dengue viruses were detected in approximately more than two third of the blood samples. Dengue virus serotype 2 was detected as the very dominant serotype in the outbreak. Co-infection by different serotypes was detected in the outbreak. Twenty nine advent strains (10 DENV-1, 12 DENV-2 and 7 DENV-3) were sequenced for partial E (envelope) gene. Phylogenetic analysis grouped DENV-1 strains in the American genotype, DENV-2 strains in the Cosmopolitan genotype and DENV-3 in Genotype III. The study will be more helpful in the study of the epidemiology of dengue fever [64].

**R.sujatha, et al (2015):** Total 650 cases were examined for dengue fever, 243 were positive for either NS1 antigen or IgM antibody or IgG antibody; prevalence was 37.38%. Among the 243 positive cases, 79 were in the age group 21-30 yrs. (55.09%), 60 were in the age group 11-20 yrs. (27.54%), 56 were in the age group <10 Yer(10.81). Among all positive cases male female ratio were 1.6:1.
Ashwini Manoor Anand, et.al 2016:- Common age group affected was 0-12 years of age (35/94 – 37.2%), followed by young adult in the age group 13 to 24 years (26/94 - 27.7%). Comparatively Females (57.5%) were affected more than the males with a male to female ratio of 1:1.35. Most of the patients were from urban areas (71/94, 75.5%). Of these, 51 cases were from the town. Most of the cases occurred during the month of November (46.8%) followed by October month (34%). Most of the patients in group had fever as the presenting feature (93/94, 98.9%). Other clinical symptoms were vomiting (64%), headache (37%), body rash (21%) and abdominal pain (12%). Bleeding and fluid accumulation which are the signs of warning and more severe dengue were seen in (18/94) and (19/94) of cases [66].