The disease Balapakshaghata has not been described directly in Ayurved classics but many Ayurved experts are considering this disease as polio myelitis.

It is one of the variety of vatavyadhis which makes the child permanently disable. Throughout the life he has to depend on others. Let us presume the disease which makes the child permanently disable due to paralysis of the limbs which is the residual symptom of the fever may be considered as Balapakshaghata. While describing vatavyadhis, all our Ayurvedic Acharyas have described the diseases such as Kanja, Pangu, Avabahuka, Amsa Shosha, Ekangavata, Pakshaghata, Sarvanga vata, Phakka Roga etc. But they have excluded Balapakshaghata. To find out appropriate disease to the polio myelitis we have to see the details of the above mentioned diseases as well as general vatavyadhi samprapti.

1. **KANJN**

Acharya Charak has mentioned the disease Khanja while describing 80 varieties of vatavyadhis. Simply he has included in the list of vatavyadhis whereas the later scholars like Acharya Susruta and Vagbhatta have described this disease in an aphoristic manner. Vitiated vayu localizes at kati region produces flaccidity and
weakness in the muscles of one lower limb is known as Khanja.

While commenting, Acharya Dalhana says that, in Khanja limping will be seen while walking (Khanja Vikalagaye Darshanat). Gayadas opined that the vitiated vayu localizes at Urdhawajanga 'Sakthi' and produces weakness in Kandara (Mahasnayu) of that area. Hence the patient cannot walk properly.

2. PANGU:

Pangu is also inserted in 80 varieties of vata- vyadhis by Charak but he has not described it clearly. Brief description of this disease is available in Susruta Samhita (Sakthno Dwayoravadhat). Vitiated vayu localizes at kati region and produces the flaccidity as well as weakness in the muscles of both lower limbs is known as Pangu. Acharya Dalhana clarifying on this subject says that, "Sarvatha gativighatat panguryarthah" the patient cannot stand and walk due to weakness in both the legs.

Gluteal muscles of both the legs are affected. As a result he will get difficulty to stand and walk. The child will crawl with the help of the body and knees.

3. PAKSHAGHAT:

Morbid vata takes seat in half of the body seizing the sira and snayus, producing looseness in
almost all the joints in the affected side, as a result the patient cannot perform any function with that particular limbs. Some times, patient may get semiconsciousness or unconsciousness (vichetana).

If half of the body is involved from face to lower limb by vitiated vata it is known as Pakshaghata. In case any one limb is affected, then the disease can be called as 'Ekangavata'. If all the four limbs get involved and functionless, the disease has been named as 'Sarvangara'.

4. AVABAHUKA:

Morbid vayu affects the Amsa Pradesha (shoulder region) by siezing the sirsas and saryus at that place resulting in the little bit dragging or contractions of the shoulder joint. Susruta clearly says that vitiation of vata and Kapha doshas and injury to sira in the shoulder joint produces the Avabahuka disease (Sahu madhye Sira vyadhah).

The disease Avabahuka mainly affects middle aged people. Males are more affected than females and seen commonly in cold climate. Nasyakarma is indicated as specific treatment along with Snehapana immediately after food.
Vitiated vayu drys the shleshaka shleshma at Amsa Sandhi region resulting in the emaciation of the muscle at Scapula is known as Amsa Shosha.15

Above diseases have been mentioned in Ayurveda in aphoristic manner. For further details we have to take the help of latest available modern literature to remove doubts and to elaborate the Ayurvedic subjects.

According to modern science, the Pangu can be co-related with paraplegia. Partial or complete paralysis of both the lower limbs is known as paraplegia. This disease may be found in the children as well as in adults but etiological factors vary and many times several factors may overlap. Some of the infantile conditions may pass on to the adult life making the patient complete dependent. The diseases which cause paraplegia in child as well as in an adult are as follows:

**Infantile paraplegia:**

1. Infantile encephalitis
2. Cerebral diplegia
3. Meningitis
4. Hydrocephalus
5. Acute anterior polio myelitis
6. Polyneuritis
7. Congenital malformation -spinal bifida.
Adult paraplegia:

1. Injury to spinal cord
2. Tumour or abscess in spinal region
3. T.B. of the spine etc.

'Khanja' can be co-related with Monoplegia in lower limb. Monoplegia will be seen in following diseases:

1. Polio myelitis
2. Disseminated selevosis
3. Ischaemic paralysis of leg
4. Spinal tumour
5. Hysterical monoplegia.

Avabahuka and Amsa Sosa, both the diseases, are produced by the compression of localized sirsas in shoulder-joint resulting in contraction as well as in emaciation in the shoulder region.

The bulk of a normal muscle is related to the age, nutrition, activities etc. For its maintenance it requires sufficient blood supply, integrity of its nerve supply and adequate exercise etc. When one or other of these factors is disturbed may lead to muscular wasting and even atrophy.

We may consider the following diseases in which the muscular wasting and even atrophy may be seen. They are:
1. Paralytic Brachial Neuritis
2. Rib pressure syndromes
3. Acute polio myelitis

In paralytic brachial neuritis, the pressure of sensory changes, the absence of fever and a normal C.S.F. are against the diagnosis of acute polio myelitis.

Rib pressure syndromes are produced by compression of the inner cord of the brachial plexus leading to localized muscular wasting.

**Hemiplegia:**

Paralysis (Pakshaghata) can be differentiated very easily from polio myelitis. Causitive factors of hemiplegia are different from polio. They are:

1. Cerebral thrombosis
2. Cerebral embolism
3. Cerebral haemorrhage
4. Hypertension
5. Cerebral tumour
6. Acute encephalitis
7. Cerebral abscess
8. Acute meningitis
9. Intracranial neoplasm.

After careful study of above mentioned diseases, we can say that all pangu (paraplegia), Khanja, Avabahuka,
Amsa Sosha, Pakshaghata etc. can not be considered as polio myelitis. However, we can say that polio myelitis is one of the causitive factors to produce pangu, Khanja, Avabahuka and Amsa Sosha. But it is cleared that, all pangu, Kanja, Avabahuka and Amsa sosha cases can not be considered as polio myelitis.

Usually polio starts with fever and then follows the paralytic stage, but none of these diseases are produced with fever. In above mentioned diseases, we won’t find this symptom which plays major role to produce polio myelitis. We should see for the diseases which start with fever and give rise permanent disability.

Particularly this disease occurs in late summer and in rainy season. In Greeshma ritu, the vata dosha accumulates (chaya) naturally and get excited (prakopa) in Varsha ritu whereas pitta accumulates (chaya) naturally in Varsha ritu and excited in Sharad ritu.

So normal doshic changes due to Kalaswabhava in Summer is vata sanchayavastha, and in rainy season it is due to vata prakopavastha and pitta chayavastha. Therefore, the disease must be vataja variety with pittanubandha.

Acharya Charaka clearly says that the vata jwara is Kastha sadhya in Varsha ritu though it is prakruta. Whereas Kapha jwara in Vasanta ritu (Spring) and Pitta
Jwara in Sharad ritu (autumn) are easily curable. Though vata jwara is Kastha sadhya in Varsha ritu, its complications are not mentioned anywhere.18

Vd. Kasture opined that, when vatajwara penetrates into deep dhatus such as Majja, the patient may get polio.19 According to Acharya Kashyapa, Majja dhatu is the seat of vata dosha. Vitiated vata may disturb the Majja resulting into polio. Vd. Kasture further clarified that the word 'Myesis' connotes Majja and 'itis' means inflammation, and polio gives the meaning of whitish substance. Inflammation of the whitish substance, which is known as Majja dhatu can be considered as Asthi majja gata jwara in Ayurveda.20 But textural references are not supporting this idea.

Some Ayurvedic scholars are interpreting the balagrahahas with virus. The virus is a micro-organism which is smaller than bacteria invisible under ordinary microscope but can be demonstrated under electron microscope. Virus are filterable and can be cultured in living organisms.

Balagrahahas mentioned by Acharya Susruta are also invisible and having qualities like virus. These balagrahahas can be controlled by maintaining the hygienic conditions and fumigating with vata shamaka drugs21 etc. Viral infection can also be controlled through hygenie and anti-viral atmosphere can be created with fumigation. Hence
Acharyas have mentioned the treatment for Sāla grahas is fumigation with vatashamaka drugs and also one should follow hygienic principles.

The scholars like Dr. C.H.S. Shastri has described and correlated polio virus to Skandha graha in his Ph.D. thesis (1976).

If it attacks the child, the following symptoms may develop, "Stabdhangah sasvedo baddha musti".

Stiffness of the body as a whole is due to painful joints, tender and rigid muscles with light fists and sweatings. Stiffness of the spine gives rise to tripoid sign.

"Natakandharah" stopped neck, absence of nuchal rigidity in prone position, but elicited in conventional supine position.

"Tasvati udwigno dantakhadi rodati risvarah" Excitability with frightened look, teeth grinding, anxious face and cry with attered voice.

"Urdhwam Nireekshata Shiro Vikshicate Muhu" Conjugate deviation of eyes with nodding of head and some times with oldematous eye lids.

"Hataikapakshah" Monoplegia or Hemiplegia indicating involvement of spine (polio myelitis).
Facial palsy when bulbar involvement (polio encephalitis) able to move, the normal eye with obliteration of naso labial fold. Deviation of the angle of the mouth with dribbling saliva. Tears flow from paralysed eye due to absence of blinking and as it is dropped. 26

"Vaikalyan va Maranam va Shavet Dhruvam" 27
Either kills the child or leaves with permanent disability.

"Vasasastra gandhi" 28 Emits the smell of bone, marrow or a wound.

The Skandha graha resembles to the polio virus infection as mentioned below. The painful joints, tender and rigid muscles giving rise to the stiffness of the body as a whole and more particularly of the spine gives rise to Tripoid sign. The drooping of the head when shoulders are elevated and the absence of nuchal rigidity in prone position but elicited in conventional supine position gives an appearance of stooped neck. Paralysis of muscles of trunk and extremeties giving rise to monoplegia or hemiplegia indicate involvement of spine. In bulbar 29 form of polio infection, the involvement of cranial nerves is seen. Polio encephalitis should be suspected when paralysis of some peripheral or cranial nerve is associated with signs of encephalitis especially during epidemics. This polio infection either kills the child or leaves with permanent disability.
Galloway et al (1951); Maloney et al (1951) and Wilson (1932) have mentioned that the important problem in life threatening polio myelitis is respiratory.

Before coming to the conclusion of Balapakshaghata, let us see the general vatavyadhi samprapti. Aggravated vayu filling up the vacant channels (Grota) in the body produces various disorders pertaining to the entire body or one of the parts. 30

While describing prognosis of Pakshaghata, Acharya Shava Mishra clearly mentioned that prognosis will be very bad if pakshaghata occurs to children, old aged persons and pregnant ladies. 31 From above reference, we can say that the disease Balapakshaghata has been mentioned indirectly by Bhavamishra. Even Savil has also clearly mentioned the infantile paralysis as the synonym for polio myelitis.

Samprapti

Balapakshaghata is one of the variety of Vata-vyadhis which is the residual symptom of the fever and it makes the child permanently disable. This disease occurs mostly in rainy season which is the vata prakopa period. In this ritu, usually the body will have avarabala (general debility) due to Dhatu Kshaya though it lies in visarga Kala. Agni is very weak and one may be prone to
get all types of digestive diseases particularly vata-
vyadhies. So one should take maximum precautions not to
provocate Vata dosha in Varsha ritu.

Skandha graha is one of the micro-organism which
enters into the stomach through the mouth, multiplies in
suitable media due to weak agni in this particular ritu.
In the absence of vikara vighatakara bhavas (Dhatu Kshaya)
these Skandhagrahas take shelter in Kapha sthana, specially
in Masthishkya majja and produces Khavaigunyam.

Simultaneously Vata dosha is provoked in
Pakwashaya due to Mityaharavihara, Kala swabhava, Abhighata
(Injection or Trauma) and Dhatu Kshaya which is the main
seat of Vata dosha. It deranges Samanavayu functions and
produces agnimandhya resulting into Ama and Jwara. It is
well known fact that, the Jwara makes santapa not only in
Deha but also in Indriyas and Manaha. In Vatajwara,
increased ṛdravapitta and Vata dosha produces rukshata in
the body and results into Kapha Ksheenata (Tarpaka
Shleshma). Tarpaka shleshma gives the nourishment to all
the Indriyas. The decreased Tarpaka Kapha, and Dhatu
Kshaya provokes the pranavayu which is mainly related in
performing all the functions of Indriyas. This provoked
pranavayu localizes at Masthiskya Majja (Kapha Sthana)
where already Khavaigunya occured due to Skandhagrahas
and deranges the functions of Indriyas particularly in
Karmendriyas. Rukshavata and Suskha tarpaka Kapha makes more derangement in Masthiskya majja (Sthana vikruti) results into permanent disable. More over Shaitilyata takes place in almost all the affected joints (Kaphasthana Shleshaka Shlema). Hence in this disease Vata dosha is provoked and Kapha dosha is decreased, therefore, we have to plan Santarpana type of treatment which decreases Vata and increases Kapha. Snehana, Swedana, Srimhana, Salya line of treatment should be advocated in this disease.
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