NURSING CARE OF PATIENTS WITH PYOGENIC MENINGITIS

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INTRODUCTION
Pyogenic (or) bacterial meningitis is a serious paediatric emergency and despite all the advances in early diagnosis and antibacterial measures is still fraught with a mortality varying from 10 to 30% in different age groups. Morbidity in survivors is appallingly high. The attack rate is high in neonatal age group as compared to grown up children.

THE CASE:
Mrs. Vishnu, 6 months old male child got admitted in Govt. General Hospital, Karaikal, diagnosed to have convulsions on admission. Investigations found that the convulsions were due to pyogenic meningitis, confirmed by analysis of CSF. Early detection, proper diagnosis, appropriate treatment and efficient nursing care got and patient discharged with in 23 days.

ASSESSMENT OF PATIENT HISTORY:

PATIENT'S HISTORY
(a) Age - 6 /12
(b) Birth History - Second child, caesarean delivery, cried soon after birth, indicated for caesarean is previous LSCS
(c) Milestones - Normal
(d) Past History - Several attacks of Respiratory infections No c/o ear discharge, vomiting etc.
(e) Immunisation - DPT vaccine at the age of 4 ½ & 12
(f) No history of previous convulsions.
(g) Present illness - c/o fever, cough, difficult breathing, staring look in fever.

PHYSICAL EXAMINATION:
3. CVS - S1S2 heard

INVESTIGATION

<table>
<thead>
<tr>
<th>Sl No</th>
<th>TESTS</th>
<th>PATIENT PICTURE</th>
<th>BOOK PICTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Hemoglobin</td>
<td>7 Gms/lt</td>
<td>11.2 to 16.5 gms/lt</td>
</tr>
<tr>
<td>2.</td>
<td>Total WBC</td>
<td>9600 x 10⁶/µl</td>
<td>4500 - 11,000 x 10⁶/µl</td>
</tr>
<tr>
<td>3.</td>
<td>DC - Neutrophils</td>
<td>52%</td>
<td>64 - 62%</td>
</tr>
<tr>
<td>4.</td>
<td>Lymphocytes</td>
<td>48%</td>
<td>25 - 33%</td>
</tr>
<tr>
<td>5.</td>
<td>Urine albumin</td>
<td>+</td>
<td>Nil</td>
</tr>
<tr>
<td>6.</td>
<td>Sugar</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>7.</td>
<td>Microscopic examination</td>
<td>10.15 pus cells/µl</td>
<td>0.2 µl</td>
</tr>
<tr>
<td>8.</td>
<td>6.8 Epi cells/µl</td>
<td>0</td>
<td>0.2 µl</td>
</tr>
<tr>
<td>9.</td>
<td>CSF - TC</td>
<td>1640 x 10⁶/µl</td>
<td>0.5 µl</td>
</tr>
<tr>
<td>10.</td>
<td>DC - Neutrophils</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>11.</td>
<td>Lymphocytes</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>12.</td>
<td>Protein</td>
<td>134 mg/100 ml</td>
<td>100 - 400 mg/100 ml</td>
</tr>
<tr>
<td>13.</td>
<td>Sugar</td>
<td>20 mmo/L</td>
<td>3.3 - 4.4 mmo/L</td>
</tr>
<tr>
<td>14.</td>
<td>CSF</td>
<td>Mid dilatation of both lateral ventricles</td>
<td></td>
</tr>
</tbody>
</table>

RS - Brachynea
Abdomen - Distended Soft; Liver – 2cm BCM, Spleen - 2cm BCM + CNS - NAD
Pupils - Reacting to light
Fundus - W.N.I.

ETIOLOGY
In infants and toddlers. H. influenzae. Str. pneumoniae. N. meningitis are commoner. In streptococcal or staphylococcal meningitis there may be evidence of infection in the air-sinus. Meningococcal may attack a perfectly healthy child with no previous focus of infectious lesion. Enterovirus accounts for 85% of all cases of aseptic meningitis. The other more frequently seen are tuberculosis, leptospirosis, parameningeal, bacterial infections, toxoplasmosis and malignancies.

SIGNIFICANCE
In pyogenic meningitis the CSF may be frankly purulent, spurt out under high pressure. CSF proteins increase, absent sugar & C.S.F. cell count increase.

PATHOPHYSIOLOGY
The meninges consist of three sheaths covering the brain and spinal cord; the pia, arachnoid and dura mater. The inflammation of the meninges is known as meningitis which is most common and im-
important disease affecting meningitis. The infection may be blood borne or local spread.

**DIAGNOSIS**

**CLINICAL FEATURES:**

<table>
<thead>
<tr>
<th>S1. BOOK PICTURE</th>
<th>PATIENT PICTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. High fever – pulse relatively slow</td>
<td>Present</td>
</tr>
<tr>
<td>2. Neck rigidity</td>
<td>Present</td>
</tr>
<tr>
<td>3. Photophobia</td>
<td>Not Known</td>
</tr>
<tr>
<td>4. Irritability</td>
<td>Present</td>
</tr>
<tr>
<td>5. Vomiting</td>
<td>Present</td>
</tr>
<tr>
<td>6. Convulsions</td>
<td>Present</td>
</tr>
<tr>
<td>7. Tense frontanel</td>
<td>Absent</td>
</tr>
<tr>
<td>8. Papilloedema</td>
<td>Absent</td>
</tr>
<tr>
<td>9. Headache</td>
<td>Absent</td>
</tr>
<tr>
<td>10. Kerning sign</td>
<td>Absent</td>
</tr>
<tr>
<td>11. Brudzinski sign</td>
<td>Absent</td>
</tr>
</tbody>
</table>

By lumbar puncture and analysis of CSF.

**MEDICAL MANAGEMENT:**

The treatment started with IVF Inj. Ampicillin 125mg Q6H. Inj. Epolit 12.5mg IV Q12H, T. Cardinal 15mg Q12H, sp. Para one tsp Q8H. for 4 days then Inj. Cefataxime 250mg Q8H, Inj. Ampici 250mg iv Q6H, Inj. GM 15mg Q12H, T. Epolit 25mg Q12H, T. Cardinal 15mg Q12H for 17 day.

(a) **NURSING MANAGEMENT**

(c) **NURSING GOALS**

1. Good personal hygiene: to improve positive outlook to prevent infection to conduct good sleep and health
2. Physical comfort: for a relaxed environment adequate rest and sleep
3. Nutritional needs: for adequate energy to tackle the sickness for equilibrium of energy
4. Change of soiled linen to prevent irritation to prevent bed sores and pressure sores.
5. Safety needs: to prevent injuries and hospital acquired infections
6. Care during fever, convulsion and procedures to prevent complications
7. Communication: to establish a rapport to assess nursing problems/needs to get co-operation
8. Psychological and spiritual needs: to avoid pricking of self esteem of patient and relatives to treat the patient and relatives as individuals.

**NURSING INTERVENTIONS**

Nurse should:

1. Provide a comfortable bed with pillows or soft pads supported by railings to prevent injuries due to fall.
2. Provide a mackintosh and draw sheet to reduce complications of bed-wetting.
3. Change soil linens as frequently as needed to avoid bed sores.
4. Provide calm and dim – lighted environment to reduce irritability.
5. Give morning, evening and bed time care, viz. oral hygiene, partial bath, combing and nail cutting to maintain good personal hygiene.
6. Give parentral nutrition as needed & maintain I.V. Infusion/ naso gastric tube.
7. Encourage small frequent feeds.
8. Admit timely attention and aseptic precautions.
9. Administer medicine after checking twice the orders, labels, etc. under direct supervision to avoid confusions or misuse of drugs.
10. Monitor vital signs.
   a. Tepid sponging if febrile.
   b. Hot water bottle if chill
   c. Attach to nasal oxygen if needed
11. Change the bed linen whenever necessary.
12. During fever
   a. Apply coconut oil or some soothing agents for cracked lips.
   b. Give plenty of oral fluids.
   c. Maintain fluid balance.
   d. Provide additional warmth by blanket if needed.
   e. Provide proper ventila-
13. WHILE CONVULSIONS
   a. Apply suction if needed to avoid secretions to block airway.
   b. Provide an airway to prevent tongue bite and falling of tongue which blocks the airway.
   c. Prefer lateral position for secretions to come out and prevent aspiration.
   d. Splint IV line to avoid unnecessary variation in position of cannula.
   e. Protect the child from injuries such as choking, aspiration of vomitus, a fall of head, etc.

14. DURING LUMBAR PUNCTURE
   a. Follow aseptic precautions.
   b. Assist the paediatrician to do the procedure.
   c. Put the patient in lateral position.
   d. Have the baby's back arched so that his head almost touch his knees.
   e. Collect label and send the specimen promptly.
   f. Don't disturb the patient from bed for 24 hours.
   g. Elevate foot end recumbent position of patient after lumbar puncture.

15. Frequently change the position to left lateral & right lateral and give back care.

16. Maintain records of intake, output, vital signs, convulsions (time, frequency, duration, parts included type, etc), drug administration, etc.

17. Explain the parents procedure to relieve anxiety and fear.

18. Provide facilities for daily prayers, allow visitors for particular time without disturbing the patient.

19. Teach after care activities.

20. Teach proper weaning.

SUMMARY AND EVALUATION

Mst. Vishnu was nursed in I.V. room near the nurse's station where he could be watched carefully. A cot with railing has been allotted to avoid injuries & was given symptomatic and antibiotic treatment with aseptic precautions.

Nursing alertness in observation prevented secondary infections and complications. Eye care prevented keratitis attacks of fever, convulsions were attended by timely interventions and therapeutic skills. Nutritional needs were met by naso-gastric tube feeding.

The relationship between patient's parents and nurse was cordial which eased their anxiety. The patient was satisfied with our care and felt comfortable. The caring hands changed helplessness into hope.

ADVICE ON DISCHARGE:
1. Regular medication should be followed.
2. Regular health check-up should be done.
3. Weaning should be practiced.

REFERENCE:

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TNAL Membership No. ________________________________

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Town / City: ___________________________ Pin: ________

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