

MEDICAL GRAND ROUNDS
PARLAND MEMORIAL HOSPITAL
September 9, 1958

ENTERO VIRUSES

Case #1 -- "Rubella" associated with ECHO 4

██████████. The patient is a 22-year-old Latin-American female admitted on ██████-58 with chief complaints of fever, chills and skin rash. Approximately one month prior to admission, patient noted rash about her belt line, diagnosed as "shingles". This cleared within a week. Three weeks prior to admission pruritic macular rash on arms; this also disappeared after 2-3 days. On ██████-58, she developed chills, fever, headache, tender areas behind each jaw and red rash over her face, arms, trunk and back.

Past History: Treated for minimal pulmonary tuberculosis in 1950-51. Readmitted in 1955 and treated during pregnancy. PAS and IMH discontinued in April because of rash. Had rubella, not rubella as child.

Epidemiologic History: Patient's children had measles in past two months, most recent being one month before admission.

Physical Examination: Temperature 101⁸; skin, reddish macular rash on face, neck, chest and abdomen; lower extremities and palms clear; palpebral conjunctivae suffused; posterior cervical nodes enlarged and tender with a right posterior auricular node.

Laboratory Findings: Hgb. 13.6 gm.%, WBC 8150 with 81% PMN; Cold agglutinin, heterophile, and febrile agglutinin negative; ASO titer 333 TU; bilirubin 0.3 mg.%; LP, 1 lymph; protein 25 mg.%, sugar 70 mg.%

Course in Hospital: Temperature fell by lysis, becoming normal within 36 hours.

Virology: Neutralizing antibodies against ECHO 4.

Case #2 -- "Rubella" with post-rubella arthritis: (ECHO 6)

██████████ The patient is a 38-year-old Negro ██████ admitted with painful joints on ██████-58. During the first week in ██████, the patient's son had rubella, a three-day rash. On ██████-58 the patient noticed a reddish, non-pruritic rash on her face which rapidly spread to her neck, shoulders, trunk and arms to her extremities. She also felt feverish. On ██████ the rash began to disappear from her face. On ██████, developed stiffness and pain on motion in PIP joints of first two fingers of left hand. The following day the wrists and fingers of both hands became tender and on 4-20 pain was noted in left knee and thigh.

Physical Examination: Temperature 101. Conjunctival slightly reddened. Wrists: swollen, warm and tender, left greater than right. Left knee slightly warm and painful on motion.

Laboratory Findings: Hgb. 12.2 gm.%; WBC 8400 with 72% PMN; ESR 45 (Wintrobe); Serology positive (was also positive in 1954); Albumin 3.5 gm.%; Globulin 4.1 gm.%; Alkaline phosphatase 11 EU; Zinc turbidity 10 units; 2 LE props. negative; Skin tests, histoplasmin positive.

Course: Temperature 100-101 for 10 days then fell by lysis. LP performed ██████; no cells, protein 24 mg.%; Sugar 152 mg.%, Wasserman non-reactive. By ██████ all joints improved.

Virology: Neutralizing titer of 1:100 against ECHO 6 ██████.

Case #3 -- "Meningococcemia" with petechiae (ECHO 9)

██████████ The patient is a two-year-old white boy admitted on ██████-58. Present illness began on ██████-58 with rhinorrhea. On ██████-58, awakened with fever, cough and irritability. Seen at Freeman Clinic on ██████-58 where a petechial rash was noted.

Epidemiologic History: Of six children and three adults at home all had the "flu". The patient's 4-year-old brother was admitted simultaneously with the identical history and findings. The patient's uncle was admitted to DVAH on ██████-58 with chills, fever, cough and malaise. X-ray revealed patchy broncho-pneumonia. No rash in the uncle.

Physical Examination: Temperature 101. Abnormalities included pharyngeal injection, and a fine petechial rash in right axilla and inner aspect of right arm.

Laboratory Findings: Hgb. 11.6 gm.%; WBC 6300 with 15 bands, 47 segs., 38 lymphs; LP, 1 lymph, Sugar 55 mg.%, Protein 30 mg.%.

Course in Hospital: Treated with sodium sulfadiazine. On [REDACTED], the petechiae increased, and generalized lymph-adenopathy appeared. Platelet count was 102,000. Repeat LP on 2-5 revealed 19 lymphs, Sugar 59 mg.% and protein 14 mg.%. Temperature remained 99-100° for 4 days then normal. Heterophile agglutination and comp. fix for viral encephalitis negative. Platelets 230,000 on 2-11.

Virology: ECHO 9 neutralizing antibodies with rising titer.

Case #4 -- Pleurodynia (ECHO 9)

[REDACTED] The patient is a 21-year-old Negro female admitted on [REDACTED]-58. Present illness -- hacking cough, non-productive for one month. On [REDACTED]-58 developed excruciating pleuritic right posterior chest pain associated with chills, fever and severe occipital headache. No skin rash.

Epidemiologic History: Non-contributory.

Physical Examination: Temperature 103; no lymphadenopathy; neck supple; guarding of right chest with no signs of consolidation.

Laboratory Findings: Hgb. 10 gm.%; WBC 17,800 with 78% PMN; urinalysis, 1-4 wbc/HPF; serology positive, bilirubin 0.6 mg.%; febrile agglutinin negative; urine culture sterile. Chest X-ray was essentially normal. LP performed 1-7 showed 0 cells, protein 8 mg.%, sugar 60 mg.%, Wasserman non-reactive.

Course in Hospital: Temperature rose to 105 associated with rigors, then fell by crisis after 36 hours. Antibiotic therapy, streptomycin and tetracycline, started one day after admission (8 hours before temperature fell). By [REDACTED]-58, she was asymptomatic.

Virology: ECHO 9 neutralizing antibodies.

Case #5 -- Aseptic meningitis (ECHO, type undetermined)

[REDACTED] The patient is a 17-year-old girl admitted on [REDACTED]-58. During the first week in [REDACTED], she was exposed to measles. Approximately [REDACTED] developed bifrontal headache with no other symptoms. On [REDACTED] she developed an increase in headache, mild non-productive cough, anorexia, vomiting and temperature of 100-101. The following day she noted stiffness of her neck and shoulders.

Past History: Noncontributory.

Epidemiologic History: Noncontributory.

Physical Examination: Temperature 101, skin normal, no lymphadenopathy, conjunctivae 2 plus palpebral injection, minimal nuchal rigidity otherwise neurologic examination normal.

Laboratory Findings: WBC 5100 with 38 bands, 41 segs., 21 lymphs and 1 mono.; Urine normal; Chemistries including alkaline phosphatase normal; Cold agglutinin 1 plus at 1:16; Mumps comp. fix positive at 1:16; LCM, LGV, SLE, WEE and EEE negative. Cultures of CSF and blood negative. Skin tests: PPD 1 and 2 and OT 1:1000 negative.

LP's	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
WBC	1267	870	1000	360	60
Polys. (%)	3	0	45	0	3
Protein	---	94	183	260	100
Sugar	55	60	36	52	52

Course in Hospital: Temperature ran from 99 to 101 for 4 days [REDACTED]-58). Headache and lethargy persisted until [REDACTED]-58. Totally asymptomatic in [REDACTED], 1958 except for occasional mild headache.

Case #6 -- Aseptic meningitis with transient mild paralysis (ECHO 6)

The patient is a 29-year-old [redacted] admitted on [redacted]-58. Course prodromal in type. On [redacted] developed headache, malaise, myalgia, nausea, vomiting, fever up to 101°, stiff neck and pain in thighs and calves. Symptoms decreased for 3 days to reappear on [redacted] with an increase in headache and temperature of 101-102. On [redacted] noticed weakness in right leg and severe stiffness of her neck. The following day she noted a sore throat, weakness in her right arm and temperature of 104.

Past History: Has had three polio injections.

Epidemiology: Both children, ages 6 and 10, had similar episodes without weakness.

Physical Examination: Temperature 103.8°, left tonsillar pillar injected, weakness of right biceps, triceps and flexors and extensors of right foot.

Laboratory Findings: WBC 7200 with 61% PMN, 34% lymphs, 1 mono. and 4 eos.; Urine negative; LP, 20 cells (16 polys., 4 lymphs), protein 30 mg.%, Sugar 95 mg.%.

Course in Hospital: Temperature fell by lysis over five days. Weakness gone by [redacted]-58. Repeat LP [redacted]; 1 mono., protein 22 mg.%, sugar 96 mg.%. On [redacted] asymptomatic except for some ease of fatigue, right calf one inch smaller than left.

Virology: No neutralizing antibody against polio 1, 2 or 3. ECHO 6 positive.

Case #7 -- Meningo encephalitis with permanent paralysis (ECHO 9)

The patient is a 48-year-old white male admitted on [redacted]-58. Present illness began on [redacted] when he awakened with severe persistent vomiting, occipital headache, chills and temperature up to 102.3°. On 6-1 vomiting diminished but fever and headache persisted and he was hospitalized. On [redacted] he developed severe pain in his right shoulder, became somnolent and confused. WBC was 18-25,000, urinalysis normal and chest film normal. On [redacted] he developed urinary retention. LP performed then showed 38 cells with 10 polys. and protein 86 mg.%. On [redacted] he became afebrile (6 days); however developed weakness in his right arm.

Physical Examination: Temperature 98.6°. Right hemidiaphragm was elevated. Neurologic examination: oriented but responded slowly, minimal left facial weakness, sensory intact, weakness of grip in right hand and decreased reflexes in right arm.

Laboratory Findings: WBC 10,500 with 82% PMN; urinalysis negative; urines negative for lead; febrile agglutinations negative; leptospiral agglutinations negative; ECG normal; EEG "diffuse abnormality"; LP [redacted] 20 cells with 11 polys., protein 64 mg.%, sugar 74 mg.%.

Course in Hospital: Remained afebrile. Developed progressive weakness of right deltoid, biceps and triceps. On [redacted] noted pain in left arm followed by progressive weakness. By [redacted] had complete left facial paralysis. Repeat LP; 5 lymphs, negative gold curve. By [redacted] his facial palsy cleared. Repeat LP on [redacted] showed 8 cells (6 pmn, 2 lymph), protein 136 mg.%. Has continued to have shoulder paresis.

Virology: Neutralizing antibodies against ECHO 9. Also present in stool.

Case #8 -- Encephalitis with oculogyric crisis (ECHO 4)

The patient is a 6-year-old Negro boy admitted on [redacted]. Present illness began on [redacted] when he developed intermittent occipital and temporal headaches which awakened him from sleep and were associated with vomiting. On [redacted] was seen in EOR with temperature of 99° and a foreign body in right auditory canal. He was seen again on [redacted] and [redacted] and considered normal. On [redacted] he began to stare upward, being unable to look downward. Admitted on [redacted] with these findings. He was afebrile, the eyes were deviated upward and to the left. Pupils were RFE and reactive. Remainder of neurological examination normal.

Laboratory Findings: WBC 8500 with 48% pmn; LP, 48 cells (30 polys.), protein 28 mg.%, sugar 64 mg.%. On [redacted] the EEG was normal but on [redacted] showed evidence of a left-sided focal lesion. Viral studies including mumps, LGV, LCM, SLE, EEE and WEE negative.

Course in Hospital: By [redacted] the eyes returned to normal. Repeat LP on [redacted] showed 2 cells (1 poly.) protein 20 mg.% and sugar 72 mg.%

Virology: ECHO 4.

Case #9 -- Pleurodynia, encephalitis and orchitis. (ECHO 9)

██████████ The patient is a 29-year-old white male admitted on ██████-57. During the last week of ██████ 1957 developed pleuritic left chest pain, temperature to 103 and rigors. WBC was 16,000. Chest film showed emphysematous blebs. Symptoms improved after several days except he developed a purulent conjunctivitis O.S. He then felt well until ██████-57 when he developed fever (102), associated with a shaking chill, and pain in left testicle (epididymus normal). These symptoms decreased over a 2-day period. On ██████ he developed nausea, weakness and syncope with a convulsion. He fell sustaining facial lacerations and bruises, no incontinence or tongue biting.

Physical Examination: Temperature 100.5, few shotty posterior cervical lymph nodes, left testicle swollen and slightly tender.

Laboratory Findings: WBC 7900 with 73% pmn.; urinalysis 1 plus albumin; bilirubin 0.8 mg.%; thymal turbidity 2.0; BSP 0% retention; febrile agglutinin and heterophile negative; mumps comp. fix. 1:16; ECG normal; EEG normal; LP 1 lymph, protein 21 mg.%, sugar 64 mg.%.

Course in Hospital: Became afebrile after the first day. No difficulty during a 36-hour fast. Subsequently has developed testicular atrophy.

GENERAL CLASSIFICATION OF NEW VIRUSES

- I. Myxo virus Group -- special affinity for certain mucins. Associated clinical entities: influenza, Newcastle disease, mumps.
- II. Adeno virus Group -- 21 human types.
Associated clinical entities: Acute respiratory disease, non-bacterial exudative pharyngitis, febrile respiratory infections in young children, pharyngoconjunctival fever, conjunctivitis and epidemic keratoconjunctivitis.
- III. Arbo virus Group (Arthropod BORne)
- IV. Miscellaneous viruses
 - A. Measles
 - B. Foamy virus group
 - C. Varicella
 - D. Behcet's disease
- V. Entero virus Group
 - A. Polio virus - 3 types.
Associated clinical entities:
 1. Paralysis
 2. Aseptic meningitis
 3. Undifferentiated febrile illness
 - B. Coxsackie Group.
Associated clinical entities.
Group A -- 19 types.
 1. Herpangina
 2. Undifferentiated summer febrile illness
 3. Aseptic meningitis: A-7 and A-9Group B - 5 types
 1. Aseptic meningitis
 2. Pleurodynia
 3. Undifferentiated febrile illness with pharyngitis
 4. Myocarditis or encephalomyocarditis
 5. Mild paralysis
 - C. ECHO Group. 20 types.
 1. Aseptic meningitis 2,3,4,5,6,9,14,16
 2. Summer rash 4,9,16
(Boston exanthem virus is ECHO 16)
 3. Summer febrile illness.
 4. Mild paralysis - 6
 5. Summer diarrhea of infants and children.

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