

Teaching scripts via smartphone app facilitate resident-led teaching of medical students

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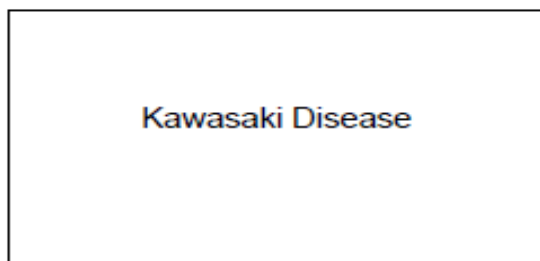
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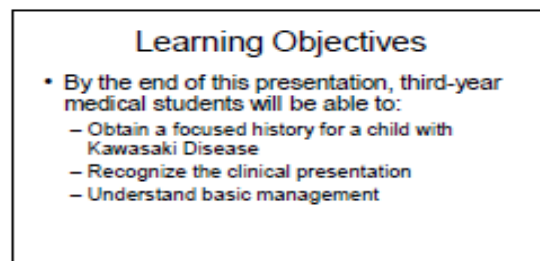
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Additional file 4: Teaching Script Example: Kawasaki Disease PowerPoint © (Lecture) Format

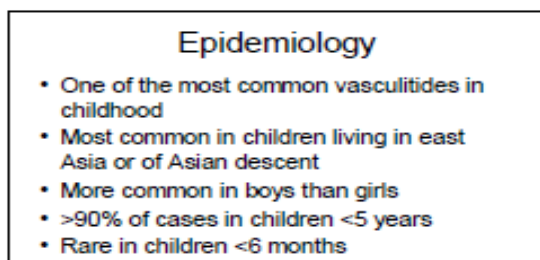
This format was utilized by residents who desired to teach with a visual aid, which could be presented either via a smartphone or a computer monitor. The content was a hybrid of the outline format (described above) and question-and-answer cards (below), but generally was the most detailed of the three formats. The main talking point appears first at the top of the slide (i.e. “Pathophysiology”), the resident would then be able to discuss this point independently without additional information, then supplement it (if deemed necessary by the resident) with our provided teaching points by progressing the presentation to reveal additional details that would then appear at the bottom of the slide.



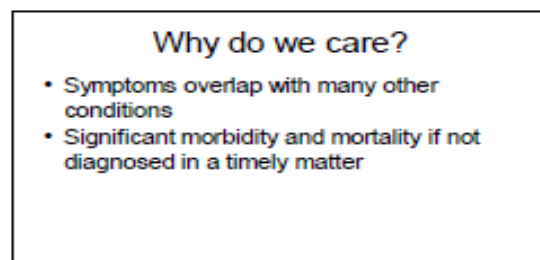
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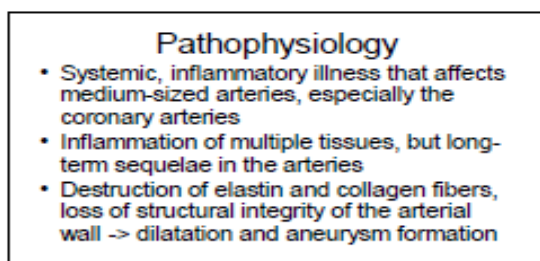
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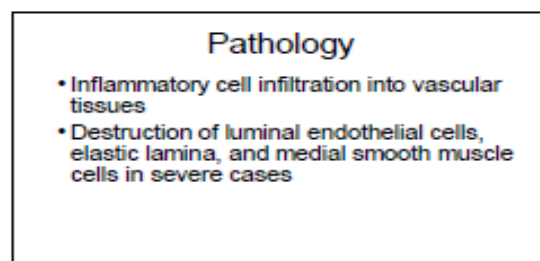
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Case

A 3 yo boy presents with 5 days of fever that does not improve with antipyretics

What other signs and symptoms would you look for?

7

History and Physical

Diagnosis requires the presence of fever lasting at least 5 days, combined with at least four of the five following physical findings, without an alternative explanation

- Bilateral bulbar conjunctival injection
- Oral mucous membrane changes, including injected or fissured lips, injected pharynx, or strawberry tongue
- Peripheral extremity changes, including erythema of palms or soles, edema of hands or feet (acute phase), and perioral desquamation (convalescent phase)
- Polymorphous rash
- Cervical lymphadenopathy (at least one lymph node >1.5 cm in diameter)



8

Initial Labs

- Complete blood counts with differential white blood cell (WBC) counts
- Aspartate transaminase (AST) and alanine transaminase (ALT)
- C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR)
- Urinalysis

9

Lab Findings

- Elevation of acute-phase reactants (ESR, CRP)
- Thrombocytosis that generally develops after the seventh day of illness
- Leukocytosis, and a left-shift
- Sterile pyuria (missed on UA because leuk esterase will be negative)
- Mild to moderate increase in transaminases

10

Other Possible Lab Findings

- CSF may display a mononuclear pleocytosis without hypoglycorrhachia (low CSF glucose)
- Arthrocentesis of involved joints typically demonstrates a pleocytosis
 - Hyponatremia (increased risk of coronary artery aneurysms)

11

Other than Kawasaki...

- What are some possible etiologies for his symptoms?

12

Differential Diagnosis

- Viral illness
- Toxic Shock Syndrome
- Rocky Mountain Spotted Fever
- Stevens-Johnson Syndrome
- Systemic Juvenile Idiopathic Arthritis

13

Complications

- Shock
- Cardiovascular complications
 - Coronary artery aneurysms (1 in 5 patients)
 - Myocardial abnormalities
 - Infants <1 year at greatest risk
- Macrophage activation syndrome, also called secondary hemophagocytic lymphohistiocytosis (HLH)
 - May lead to severe complications including disseminated intravascular coagulopathy, cytopenias, and thrombosis

14

Initial Treatment

- IVIG within the first 10 days decreases risk of coronary aneurysms (CA) 5 fold
- Decreased CA aneurysms if given IVIG with aspirin compared to aspirin alone
- IVIG given once and patient observed to confirm resolution of fever

15

Referrals/Consults

- Pediatric rheumatologists
- Infectious disease specialists
- Cardiologists, and/or
- Hospitalists at a pediatric institution with experience in treating Kawasaki disease can aid in diagnosis and management

16

Prognosis

- Mortality due to KD is rare among children treated with intravenous IVIG
- Long-term morbidity is primarily related to the degree of coronary artery (CA) involvement
- Recurrence of KD is uncommon.

17

Follow-up

- Monitoring for recurrence of fever
- Repeat echocardiograms to assess for cardiac involvement

18

References

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- Diez, S.M., van Sijjn, D., Burgner, D. et al. Dissecting Kawasaki disease: a state-of-the-art review. *Eur J Pediatr* 178, 995–1009 (2017). Doi: 10.1007/s00431-017-2937-5
- Newburger J.W., Takahashi M., Burns J.C. Kawasaki Disease. *J Am Coll Cardiol* 67 1738-1749 (2016).