TEACHING FILE

GRAND ROUNDS

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VOMITING WITH VENTRICULAR SEPTAL DEFECT

Case Report: A 6 month old boy with congenital moderate ventricular septal defect (VSD) on decongestive measures consisting of frusemide and digoxin presented with irritability, vomiting and oliguria since 2 days. There is no fever, refusal of feeds or lethargy. On examination, he is malnourished (weight = 4kg), with some dehydration, has heart rate of 100/min and a pansystolic murmur at the apex. Other systems are normal.

What is the diagnosis? How to treat?

Expert's opinion: - This child has presented with vomiting and oliguria. Oliguria may be due dehydration and decreased intravascular volume. The dehydration is because of persistent vomiting. Vomiting could be because of several reasons such as infection, gastritis or drug induced. This child has no fever or refusal of feeds. Thus infection seems an unlikely cause. Gastritis in a normally feeding infant is unlikely (There being no infection or nil by mouth). Thus vomiting seems to be drug induced. Digoxin in toxic levels can lead to vomiting. Digoxin toxicity can also lead to bradyarrhythmia. In this child even though the child is dehydrated, there is no tachycardia. (Though bradycardia is not present, the heart rate seems to have remained normal due to simultaneous dehydration). Thus, in this child the diagnosis is Digoxin toxicity. Serum digoxin levels in the child were elevated [2.7 (Normal being <2.2)] Digoxin toxicity when diagnosed, one should stop Digoxin till Digoxin levels return to normal. FAB antibodies can be used to prevent digoxin effect.

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RASH

Case Report: An 11 year old HIV infected girl on 3 drugs ART consisting of Zidovudine (AZT), Lamivudine (3TC) and Efavirenz (EFV) since past 1 year presented with generalized swelling all over body with itching and rash since 5 days. She was given Nevirapine (NVP) instead of EFV by a local hospital 7 days ago. She also has NVP induced rash 1 year ago when she was first started on ART and hence shifted to EFV.

What could be the cause of present problems?

Expert's opinion: - Since the child had skin rashes earlier with Nevirapine and now again has received NVP, one may very well assume that the present swelling and itching and rash could also be due to NVP. The swelling is suggestive of angioedema and rash and itching is suggestive of urticaria. In this child, blood counts demonstrated eosinophilia (absolute eosinophil count = 2,942 cells/cumm) and rash subsided with steroids and antihistaminics.

Thus, one must never restart NVP in a child who has already had allergic reactions to the same as these allergic reactions may be life threatening. Also, ideally if there is an allergic reaction to any one drug of the NNRTI group, one must avoid all drugs in that group. However, since the child could not afford protease inhibitors, we have put the child on Efavirenz and she is not having any problems with the same.

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MALARIA

Clinical Problem: A 10 years old boy born of non consanguineous marriage presented with fever with chills, pain in right hypochondriac region since 10 days and diarrhea since 3 days. There is no history of jaundice, bleeding or blood transfusion. On examination, vital parameters were normal. Child had pallor with hepatosplenomegaly. Other examination findings were normal.

Investigations showed:-

- Hemoglobin = 7.8 gm%
- WBC count = 2,800/cumm [68% polymorphs, 29% lymphocytes]
- Platelet count = 56,000/cumm
- Total Bilirubin = 2.1 mg/dl [Direct bilirubin = 1.1 mg/dl]
- SGPT = 33 IU/L
- S. creatinine = 1.5 mg/dl
- Peripheral smear = Gametocytes of plasmodium falciparum
- OptiMAL test = Plasmodium falciparum positive
- Dengue, Leptospira = Negative

Child was treated with oral quinine and IV Artesunate to which he responded.

Can artesunate and quinine be given together?

Expert's opinion: Artemisinin compound has been used in China for treatment of malaria for over a thousand years. It has a broad spectrum activity against all stages of malarial parasite as well as all 4 plasmodium species. In falciparum malaria, it is also gametocidal. The elimination half-life is approximately 1 hour and thus they are potent short acting agents. The common side effects are gastrointestinal disturbances, dizziness, tinnitus and prolongation of QT interval.

Quinine is derived from bark of Cinchona tree. It acts on the mature trophozoite stage of parasite development. The elimination half life is about 11 hours in healthy individuals, 16 hours in uncomplicated malaria and 18 hours in severe malaria. Adverse effects are common and include tinnitus, impaired high pitch hearing, vomiting, urticaria, hemolytic-uremic syndrome, hypoglycemia and prolonged QT interval on ECG (seen in intravenous quinine).

Since plasmodium falciparum has been found to be resistant to most of the currently used antimalarials, combination therapy with antimalarials is now recommended. The combination consists of two or more blood schizonticidal drugs and includes a

combination of a short acting antimalarial with a long acting antimalarial. Both artemisinin compounds and quinine are short acting and have common side effects. Hence they should not be used together.

Combinations that are recommended are:

- Artesunate (short acting)+ Mefloquine (long acting)
- Artesunate (short acting)+ Sulfadoxine-pyrimethamine (long acting)
- Artemether (short acting) + Lumefantrine (long acting)
- Quinine + Clindamycin
- Quinine + Tetracycline/Doxycycline

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