Cases of Severe Malaria and Cerebral Malaria in Apam Catholic Hospital and Manhiya District Hospital

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QUESTION

What pediatric age group does malaria affect the most?

A) 0-2
B) 3-6
C) 7-10
D) 11-14
E) 15-18
BACKGROUND

• Malaria is an illness with a heavy global impact, killing an estimated 2.7 million people annually worldwide.

• Despite years of research on malaria, there is much to be learned about the human immune response to *Plasmodium falciparum* and *Plasmodium vivax*. 
Malaria is still one of the leading causes of death in Ghana

In Ghana, over 40% of outpatient cases and over 60% of hospital admissions are due to malaria
METHODS

• Data was collected from pediatric medical records at Apam Catholic hospital and Manhiya District Hospital from November 2007 through April 2008

• Only cases of severe and cerebral malaria were recorded

• The age, sex, and disease (severe malaria or cerebral malaria) were also recorded for those months
METHODS: Study Design

Find Admission Records

Collect data only on severe and cerebral malaria

Collect data on age, sex, and disease

Collected 73 cases

Cases collected within the last 6 months

Information gets inputted into a database
DEMOGRAPHICS

Gender Percentages

47% Male
53% Female
Percentage of all children with Severe or Cerebral Malaria

- Severe Malaria: 77%
- Cerebral Malaria: 23%
Ages of children with Severe or Cerebral Malaria

- 0-2: 58%
- 3-6: 23%
- 7-10: 12%
- 11-14: 4%
- 15-18: 3%

Age in Years
Ages of children with Severe Malaria versus Cerebral Malaria

Age in Years

- 0-2: 42%
- 3-6: 12%
- 7-10: 18%
- 11-14: 5%
- 15-18: 5%

Severe Malaria

Cerebral Malaria

Age in Years

- 0-2: 0%
- 3-6: 0%
- 7-10: 0%
- 11-14: 3%
- 15-18: 0%
Gender Breakdown for Both Severe and Cerebral Malaria

Severe Malaria
- Male: 44%
- Female: 9%

Cerebral Malaria
- Male: 33%
- Female: 14%

Legend:
- Turquoise: Severe Malaria
- Maroon: Cerebral Malaria
CONCLUSIONS

• Pediatric children from ages 0-2 have the highest propensity to get cerebral or severe malaria.

• As the ages of the patients increased the incidence of cerebral and severe malaria decreased greatly. This trend could be explained by a natural or "induced" immunity.

• Many studies have shown that people living in endemic areas of malaria with extremely high transmission rates develop a natural immunity to infection.
CONCLUSIONS (cont.)

• The current philosophy on induced immunity is upheld by the Malaria Immunity Paradigm (MIP), established via studies in areas of intense malaria transmission, mainly in sub-Saharan Africa.

• The MIP upholds that induced immunity is difficult to achieve and is dependent upon frequent bouts of malaria for each individual within a given year.

• As defined by the MIP, the more transmission is intense and regular within a population, the higher the prevalence of asymptomatic infections indicative of clinical immunity.
IMPLICATIONS

• We need to be able to comprehend what factors go into natural or induced immunity in order to construct a vaccine

• A vaccine to children, especially in the 0-5 age group range, would be greatly beneficial in reducing malaria morbidity and mortality

• Malaria prevention include insecticides, insecticide treated nets, closed gutters, prophylaxis (for travelers), and as discussed before vaccines
PROBLEMS

• Resistance to insecticides; a lot of families do not have nets, and failure to develop an effective vaccine

• Resistance to treatment; The introduction of artemisinin based combinations may reverse that trend, but resistance to these drugs will evolve eventually

• It is crucial to establish and maintain close surveillance as new drugs are introduced so that they will have the maximum useful therapeutic life
LIMITATIONS

- Records at Apam and Manhiya were not always the most reliable. In both cases sometimes cerebral malaria was listed as just severe malaria.
- Small sample size to accurately predict such an endemic disease.
- Study only took into account two hospitals in Ghana.
- The data collection period was only 6 months.
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REFERENCES


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THANK YOU