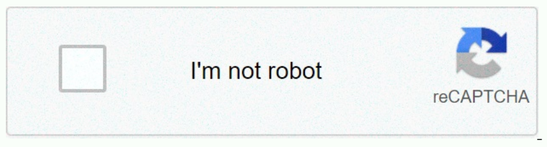

Continue

Biology project on malaria pdf

1. 2011 Project document on the Department of Public Health of Malaria Presented by: Imran Ahmed [Type the name of the company] 1/1/2011 2. Content: 1. Introduction. 2. Life cycle. 3. Causes, incidence and risk factors. 4. Symptoms. 5. Diagnosis and testing. 6. Complications. 7. Malaria situation in Bangladesh. 8. Treatments. 9. References. Page | 2 3. Introduction:Malaria is an infectious disease transmitted by mosquitoes of humans and other animals caused by eukaryotic ists of the genus Plasmodium. The disease results from the multiplication of Plasmodium parasites within red blood cells, causing symptoms that typically include fever and headaches, in severe cases that progress towards coma or death. It is found in tropical and subtropical regions, including much of sub-Saharan Africa, Asia, and the Americas.Five species of Plasmodium can infect and be transmitted by humans. Severe disease is largely caused by Plasmodium falciparum while the disease caused by Plasmodium vivax, Oval Plasmodium ePlasmodium malariae is generally a milder disease that is rarely fatal. Plasmodium knowlesi is azoonosis that causes malaria in macaques but can also infect humans. Malaria transmission can be reduced by preventing mosquito bites by distributing mosquito nets and insect repellents or by mosquito control measures such as spraying insecticides and draining stagnant water (where mosquitoes breed). The challenge of producing a widely available vaccine offering a high level of protection for an extended period has yet to be met, although many are in development. Several drugs are also available to prevent malaria in travelers to countries endemic to malaria (prophylaxis). A variety of malaria drugs are available. Severe malaria is treated with intravenous orintramuscular quinine or, since the mid-2000s, with artemisinin derivative artesunate, which is superior to quinine in both children and adults. Resistance has developed to several antimalarial drugs, especially chloroquine. It is estimated that in 2009 there were 225 million cases of malaria worldwide. An estimated 781,000 people died of malaria in 2009 according to the World Health Organizations 2010 World Malaria Report, which accounts for 2.23% of deaths worldwide. [9] Ninety percent of malaria-related deaths occur in sub-Saharan Africa, with most deaths being young children. Plasmodium falciparum, the most severe form of malaria, is responsible for the vast majority of deaths associated with the disease. Malaria is commonly associated with poverty and can indeed be a cause of poverty and a great consequence of economic development. Page | 3 4. Cycle Female anopheles mosquito carrying malaria-causing parasites feeds on a human and injects iparasites in the form of sporozoites into the bloodstream. Sporozoites travel to the liver and invade river cells. In the set of 5-16 days, sporozoites grow, divide and produce tens of thousands of haploid forms, called marketozoites, by liver cell. A little malaria remain inactive for long periods in the river, causing relapses weeks or months later. Merozoites come out of liver cells and enter the bloodstream again, starting a cycle of invasion of red blood cells, asexual replication and release of freshly formed merozoites from reddish blood cells for 1-3 days. This multiplication can lead to thousands of cells infected with parasites in the host's bloodstream, leading to diseases and limitations of malaria that can last months if not treated. Some of the blood cells infected with merozoitis leave the multiplication cycle asexual. Instead of replicating, merozoites in these cells develop into sexual forms of the parasite, called male and female Figures 1: Life cycle of the malaria parasite.gametocytes, which circulate in the bloodstream. When a mosquito bites an infected human, it ingests gametocytes. In the intestines of mosquitoes, infected human blood cells burst, releasing gametocytes, which develop further into mature sex cells called games. Male and female gametes merge to form diploid zygotes, which actively develop in movingookinetes that dig into the midgut wall of mosquitoes and form oocyst. The growth and division of each oocist produces thousands of active haploid forms called sporozoites. After 8-15 days, the oocyst bursts, releasing sporozoites into the body cavity of the mosquito, from which they travel and invade the salivary glands of mosquitoes. The cycle of human infection begins again when the themosquite takes a blood meal, injecting sporozoites from its salivary glands into the human blood page | 4 5. Causes, accidents and risk factors:Malaria is caused by a parasite that is passed from one human being to another by the bite of affected Anopheles mosquitoes. After infection, parasites (called sporozoites) travel through the bloodstream to the liver, where they mature and release another form, themerozoites. Parasites enter the bloodstream and infect red blood cells. Parasites multiply inside red blood cells, which then open within 48-72 hours, infecting multiple red blood cells. The first symptoms usually occur from 10 days to 4 weeks after infection, although they can appear already 8 days or up to a year after infection. Symptoms occur in cycles of 48 to 72 hours. Most symptoms are caused by:1. The release of merozoites into the bloodstream2. Anemia resulting from the destruction of red blood cells3. Large amounts of free hemoglobin released into circulation after the rupture of rossiopenMalaria blood cells can also be transmitted from a mother to her unborn (congenital) baby and blood transfusions. Malaria can be carried by mosquitoes in temperate climates, but parasites disappeared during the winter. disease is a serious health problem in most of the tropics and subtropicals. The CDC estimates that there are 300-500 million cases of malaria each year and that more than 1 million people die from it. It presents a serious risk of illness for travelers from warm climates. In some areas of world, malaria-carrying mosquitoes have developed resistance to inaccucids. In addition, parasites have developed resistance to some antibiotics. These conditions have led to difficulties in controlling both the rate of infection and the spread of this disease. There are four types of common malaria parasites. Recently, a fifth type, Plasmodium knowlesi, has caused malaria in Malaysia and areas of Southeast Asia. Another type, scythummalaria, affects more red blood cells than other types and is much more severe. It can befatal within a few hours of the first symptoms. Page | 5 6. Symptoms: Anemia Bloody Feces Figure 2: Symptoms of Malaria Chills Coma Convulsion Fever Figure 3: Transfusion of a child with severe anemia due to malaria Headache Jaundice Muscle pain Nausea Sweating Vomiting Figure 4: A patient suffering from jaundice due to severe malaria. Page | 6 7. Diagnosis and testing:In order to make a diagnosis of malaria, the healthcare professional can ask a number of related questions: Current symptoms Medical conditions Family medical history Current drugs Recent travel history. The healthcare professional will also likely perform a physical examination, looking for signs or symptoms of malaria. It can also order some tests to help diagnose malaria or another condition. Your doctor may suspect malaria based on patients' symptoms and physical results on examination; however, to make a definitive diagnosis of malaria, laboratory tests must demonstrate malaria parasites or their components. The best test available to diagnose malaria is called bloodsmear. In this test, malaria parasites can be identified by exhaling a drop of patients' blood under a microscope, spread like a blood smear on a slide under a microscope. Before the examination, the specimen (blood) is stained to give theparasites a distinctive appearance. Other blood tests are available that can be used together with a blood smear to confirm a diagnosis of malaria. Figure 5: Blood smear examinationA diagnosis of malaria can be difficult to do, especially in areas where malaria is not very common. A number of other conditions share similar symptoms with malaria. Some of these conditions that healthcare professionals will consider before diagnosing malaria include: Page | 7 8. Flu (flu) Common cold Meningitis Typhoid fever Dengue fever Acute schistosomiasis (worm disease) Bacteremia/septicaemia (infection in the blood) Viral hepatitis Gastroenteritis (stomach flu) Yellow fever (disease typically transmitted by mosquitoes). Complications:Malaria can be fatal, especially the variety that is common in tropical parts of Africa. The Centres for the Control and Prevention of estimate that 90% of all malaria deaths occur in Africa - most commonly in children under the age of 5.In most cases, malaria deaths are related to one or more of these serious complications:Cerebral malaria. If blood cells filled with parasites block small blood vessels in the brain brain swelling of the brain or brain damage may occur. Respiratory problems. The fluid accumulated in the lungs (pulmonary edema) can make it difficult to breathe. Organ failure. Malaria can cause kidney or liver failure or spleen rupture. One of these conditions can be life-threatening. Severe anemia. Malaria damages red blood cells, which can cause severe anemia. Low blood sugar level. Severe forms of malaria itself can cause low blood sugar levels, as well as quinine , one of the most common drugs used to fight malaria. Very low blood glucose can cause coma or death. Recurrence can occurSome varieties of the malaria parasite, which typically cause milder forms of the disease, can persist for years and cause relapses. Page | 8 9. Table 1: Indicators of severe malaria and inaustic prognosis [1,3-5]Characteristics of the eventEmptom criteria of the World Health Organisationinitial 1990 [3]1. Cerebral malaria: Unbearable coma not attributable to other causes, with a Score Glasgow Coma Scale ≤9; The coma should persist for at least 30 minutes after a generalized convulsion2. Severe hematocrit anaemia <15% or= hemoglobin=></15%> < 50= g/l= in= the= presence= of= parasite= count=> 10000/µl3. Renal failure Production of <400 ml/24= hours= in= adults=></400> <12 ml/kg/24= hours= in= children)= and= a= serum= creatinine=>urine 265 µmol/l (> 3.0 mg/dl) despite adequate volume depletion4. Metabolic metabolic acidosis (lactic acid) is defined by an arterial pH <7.35Acidosis cidosis= with= a= plasma= bicarbonate= concentration= of=></7.35Acidosis> <22 mmol/l;= hyperlactatemia= is= defined= as= a= plasma= lactate= concentration= of= 2-5= mmol/l= and= lactic= acidosis= is= characterized= by= a= ph=></22> <7.25 and= a= plasma= lactate=>of the blood of 5 mmol/L.5. Pulmonary edema or acute breathlessness, bilateral crackle and other features of pulmonary edema of respiratory distress syndrome. The acute lung injury score is calculated on (ARDS) based on x-ray densities, hypoxemia severity and positive end-exhaler pressure6. Hypoglycaemia Concentration of whole blood glucose less than 2.2 mmol/l (less than 40 mg/dl).7. Hypotension and shock Systolic blood pressure <50 mmhg= in= children= 1-5= years= or=></50> <70(algid malaria)= mm= hg= in= patients= ≥5= years;= cold= and= clammy= skin= or= a= core-skin= temperature= difference=>100C8. Abnormal bleeding and/or spontaneous bleeding from the gums, nose, gastrointestinal intavascular tract, retinal hemorrhages and/or laboratory tests of diffuse intravascular clotting. Page | 9 10. 9. Repeated generalized seizures ≥3 within 24 hoursconvulsions10. Hemoglobinuria Macroscopic urine brown or red; not associated with the effects of oxidizing drugs or enzyme defects (such as G6PD deficiency)Added World Health Organization criteria since 2000 [4]11. Impaired consciousness Various levels of impairment may indicate a serious infection even if they do not fall within the definition of cerebral malaria. These patients are generally exoble12. Prostration Extreme weakness, needs support13. Hyperparasytamia 5% parasitic erichrocytes</70(algid> </7.25> </12> </12> > 250 000 parasites/µl (in non-immune individuals)14. Hyperpiressia Internal body temperature above 400C15. Bilirubin jaundice of more than 43m mol/l (2.5 mg/dl). (Hyperbilirubinemia) Another 16. Fluid and electrolytic dehydration, postural hypotension, clinical evidence of disturbing [5] hypovolemia17. Vomiting of oral drugs Patients with persistent vomiting may be allowed for parenteral therapy.18. Bronchopneummony from complicating or associated aspiration, septicaemia, infection of urinary tract infections, etc.19. Other indicators of low leukocytes >12,000/cumm; high CSF lactate (>6prognosis [5] mmol/l) and low CSF glucose; more than 3 times the elevation of serum enzymes (aminotransferase); increase in plasma 5- nucleotidese; low levels of antithrombin III; peripheral schizontemia; papilloedema/retinal edema Page | 10 11. 20. Malaria retinopathy A large prospective autopsy study of children dying of cerebral malaria in Malawi found that malaria retinopathy is a better indicator of malamalic coma. Similar retinopathy has also been reported in an adult. Malaria in Bangladesh: Malaria has been a serious public health problem in Bangladesh. About 33.6% of the total population is at risk of malaria Most malaria cases are reported by 13 of the country's 64 total districts. About 4 million people living in 34 upazillas in eight of the thirteen districts live in epidemic-prone border areas. Focal outbreaks occur every year and the response to control the epidemic is inadequate. Cases of malaria are severely undercut due to deficiencies in surveillance and information. The country reports an average of 50,000 confirmed cases of malaria with about 70% of PF (malaria killer) cases and 450 deaths from malaria per year. The case is very poor and the <2% at risk of malaria is exapped every year. In 2008-2009, with the help of global funds, increased surveillance and case research activities, including vector control through bed networks and treatment through ICT, saw an increase in confirmed cases in the laboratory and a significant increase in malaria deaths. In 2009, the country reported no cases of profitable malaria. FIGURE 6: Trends in confirmed cases of malaria in Bangladesh, 1970-2009Tale 2.57 million tusks (LLINS+ ITN) were distributed and 6.42 million people covered. However, its coverage in high endemic districts ranges between 40% and 63%. Page | 11 12. Figure 7: Distribution of the ACT and number of malaria deaths in Bangladesh, 2005-2009Figure 8: 2Evative availability of effective LLIN & ITN in Bangladesh, 2005-2009 Total malaria funding in 2009 was around $9.5 million, the main sources being the government ($555,000), the Global Fund million US dollars), the World Bank (US$890,000) and the WHO (US$230,000). Figure 9: Availability of funds per source in Bangladesh, Bangladesh, Page | 12 13. Pogramme Goals and Goals:Reduce morbidity and mortality from malaria until the disease is no longer a public health problem in the country. Basic Data Targets 2010 in 2005 Provide early diagnosis and timely treatment (EDPT) 40% 80% with effective drugs to 80% of malaria patients Provide effective malaria prevention to 80% of 24% of the population at risk 80% To strengthen epidemiological surveillance of malaria 60% system 100% To establish a rapid response team (RRT) at national level and 80% 100% district levels and increase preparedness and response capacity for outbreak containment To promote community participation, and strengthen 25% 80% partnerships with the private sector and malaria control NGOs Cost control strategy: Malaria control activities are integrated with the General Health Services Active Case Detection (ACD) and Passive Case Detection (PCD) with laboratory diagnosis Timely treatment Management of cases of severe malaria and complicated cases in the hospital. Minimum vector control, no IRS with DDT since 1993. The SEAR working group's recommendation on the revised control strategy was adopted due to the spread of chloroquine resistance, the drug regime was reviewed and coartem was introduced by the Programme Strengthening Programme Management is of high priority Best practices and success stories Creating a partnership with the NGO consortium. Promotion and use of ITN/LLIN Quality diagnosis using RDT and effective treatment using the ATT page | 13 14. Issues and challenges: inadequate access to treatment and diagnostic facilities, especially in remote areas Insufficient programme management capacity at various levels and management of severe malaria in hospitals Poor coverage of prevention and control methods (IRS, ITN/LLIN coverage still low) in the community reference system is weak and pre-referral treatment provisions are limited; Optimal treatment of severe malaria cases in different categories of hospitals is inadequate Cross-border malaria on the border between Bangladesh India and Ban- MyanmarPartner and DONORS WHO World Bank Global Fund BRAC and 14 NGOs partner 4 local NGOs in Chittagong Hill Tract (CHT) Page | 14 15. Treatments:Preventing malaria - four stepsI'm an ABCD for malaria prevention. This is: Awareness of the risk of malaria. Prevention of bites. Chemoprophylaxis (taking antimalarial drugs exactly as prescribed). Rapid diagnosis and treatment. Malaria risk awareness: The risk varies from country to country and type of journey. For example, back-packing or travel to rural areas is generally riskier than staying in urban hotels. In some countries, the risk goes to between seasons - malaria is more common in the rainy season. The main type of parasite and the amount of resistance to drugs vary in different countries. Although the risk varied, all travelers to countries at risk of malaria should take precautions to prevent malaria. Malaria-transmitting mosquitoes commonly fly from sunset to dawn and and nights are the most dangerous time for transmission. Bite prevention:We can an effective insect repellent to clothing and any exposed skin. Diethyltoluamide (DEET) is safe and insect repellent more effective and can be sprayed on clothes. It lasts up to three hours for 20%, up to six hours for 30% and up to 12 hours for 50% DIET. There is no further increase in the duration of protection beyond a concentration of 50%. When both sunscreen and DEET are required, DEET must be applied after sunscreen is applied. DEET can be used on infants and children over two months of age. In addition, DEET can be used, in a concentration of up to 50%, if someone is pregnant. It is also safe to use if you are keeping up with the power supply. If we sleep outdoors or in an uns screened room, we should use mosquito nets impregnated with an insecticide (such as pyrethroid). The mesh should be long enough to fall on the floor all around the bed and be hidden under the mattress. We should regularly check the network for holes. Nets must be re-impregnated with insecticide every six to twelve months (depending on how rarely the mesh is washed) to remain effective. Long-lasting networks, in which pyrethroid is embedded in the material of the network itself, are now available and can last up to five years. If practiced, we should try to cover bare areas with long-sleeved and wide-sleeved clothing, longtrousers and socks - if we are out after dark - to reduce the risk that mosquitoes will bite. Clothing can be sprayed or impregnated with permethrin, which reduces the risk of being hit through our clothes. Page | 15 16. Sleeping in an air conditioning room reduces the likelihood of mosquito bites, due to the lowering of the room temperature. Doors, windows and other possible entrance routes of mosquitoes to sleep the accommodation should be shielded with fine mesh nets. we should spray the room before sunset with an insecticide (usually a pyrethroid) to kill any mosquitoes that may have come into the room during the day. If electricity is available, we should use an electrically heated device to vaporize a tablet containing a synthetic pyrethroid in the room at night. Burning a mosquito coil is not so effective. Herbal remedies have not been tested for their ability to prevent or treat malaria and are therefore not recommended. Similarly, there is no scientific evidence that homeopathic remedies are effective in preventing or treating malaria, and they too are not recommended. Antimalarial drugs (chemoprophylaxis):I antimalarial drugs help prevent malaria. The best drug to take depends on the country you visit. This is because type of parasite varies between different parts of the world. In addition, in some areas the parasite has become resistant to certain medicines. There is the possibility of antimalamines that we can buy in the tropics or on the Internet, beingfake. It is therefore recommended to obtain our malaria treatment from our or a travel clinic. Drugs to protect against malaria are not funded by the NHS. We will have to buy them, regardless of where we get them. The type of drug recommended will depend on the area you are traveling to. It will also depend on any health problems we have, any medication you are currently taking, the length of our stay and also any problems we may have had with malaria medications in the past. We should seek advice for every new trip abroad. Do not assume that the drug we took for your last trip will be recommended for your next trip, even in the same country. There is a changing pattern of resistance to certain medicines by parasites. Doctors, nurses, pharmacists and travel clinics are regularly updated on the best drugs to take for each country. We need to take the drug exactly as recommended. This usually involves starting the drug up to a week or more before going on the road. This allows the level of medicine in our body to become effective. It also gives time to check for any side effects before traveling. It is also essential to continue taking the drug for the correct recommended time after returning to our home (often for four weeks). The most common reason why malaria develops in travellersisis because the antimalarial drug is not taken correctly. For example, some doses may be missed or forgotten, or tablets can be stopped too early after returning from the trip. Page | 16 17. Symptoms of malaria (to help with timely diagnosis):I symptoms are similar to flu. They include fever, chills, sweating, back pain, joint pain, headaches, vomiting, diarrhea and sometimes delirium. These symptoms can take a week or more to develop after being bitten by a mosquito. Occasionally, it takes a year for the development of symptoms. This means that we should suspect malaria in anyone with a febrile disease who has been to a malaria-risk area in the last year, especially in the previous three months. Special situations: Pregnant women are particularly at risk of severe malaria and, ideally, should not go to areas at risk of malaria. Full discussion with a doctor is advisable if you are pregnant and intend to travel. It is believed that most malaria drugs are safe for the unborn child. Some, such as mefloquine, should be avoided in the first twelve weeks of pregnancy. Non-pregnant women taking mefloquine should avoid getting pregnant. It must continue with contraception for three months after the last dose. If you are given doxycycline and are also taking the combined oral contraceptive pill (COCP) or using the patch, then use alternative contraception for the first three weeks of taking doxycycline. This is because doxycycline can interfere with the effectiveness of COCP (or patch). After three weeks you will not need to use any additional contraception. If you have epilepsy, kidney failure, some forms of mental illness and some other un common diseases, you may have a antimalarial drugs. This may be due to your condition or possible interactions with other medications we may be taking. If we do not have a spleen (if you removed it) or our spleen does not work well, then we have a particularly high risk of developing severe malaria. Ideally, we should not bring a country at risk of malaria. However, if travel is essential, every effort should be made to avoid infection and we should be very strict in taking our malaria drugs. Travelers who go to remote places away from medical facilities sometimes take emergency medication with them. This can be used to treat suspected malaria until adequate medical care is available. Page | 17 18. References: complications Page | 18 18