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District Health System *now more than ever*: A lesson From The Past-Sudan

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Summary:

Efforts to increase access to primary health care are ongoing in Sudan. Many health facilities were established and many health personnel were trained. As time passes, there is great concern about the sustainability as well as the effectiveness of these services due to lack of efficient local health system. With the establishment of federal system, Sudan was divided into states and localities with division of responsibilities between different levels. Health, in most of the cases, is the responsibility of states and localities. Tremendous efforts are going on to develop the capacity of states with few attempts to develop the local health system. This short communication aims to through light on the experience of health area policy in Sudan. The concentration will be on the experience of Umshanig health area (1982 -1986), East Gezira which is the first in Sudan. Though the time was change, still lessons can be obtained from this experience.

The health system in Sudan:

Currently the administrative system in Sudan is the three-tier system: national, state and locality. This differs from the system during the 1980s in Sudan where there were no states. Instead there were regions (containing 2-3 states) and a province (almost equal to current states). The health system follows the same pattern now and in the past. The difference is in the number of health facilities and the personnel at health facilities level. There was a general hospital (at the province level with specialists), rural hospitals (each with only one general practitioner), limited number of health centers (run by medical assistants) and a number of dispensaries and health units which are run by certified nurses or health aides.

There is no relationship or coordination at any level, whether at provision of care services or administration or between these facilities. But each unit deals directly with the services management department at province level. As well there is no relationship between these facilities and the general hospital in the city. This resulted in a fragmented health system and services and as a consequence poor outcome. Coordination and integration between these facilities is urgently needed and as well there is need for link with the community leaders, communities and local institutions. It is here originated the idea of the health district in Umshanig Area.

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Health Area Policy:

This short communication aims to through light on the experience of health area policy in Sudan. The concentration will be on the experience of Umshanig health area (1982 - 1986), East Gezira which is the first in Sudan. Following the Alma-Ata Conference (1978) there was a big movement in Sudan towards rural health. The Ministry of Health adopted the health area policy. The medical directors at rural hospitals were well informed with the policy and were asked to prepare their hospitals for the new movement. The medical director at Umshanig Rural Hospital, Eastern Gezira Area, Central Region of Sudan took the lead. This exactly began in 1981, just 3 years after Alma-Ata. While medical directors are usually busy with the hospital day to day work, the medical director in Umshanig planned to link the hospital with the community leaders in the catchment area encouraging them to take an active role regarding their health. This step was the first trial in Sudan to put health area policy in action with little experience worldwide. The movement in Umshanig was supported by the Ministry of Health in the Central Region, the national Ministry of Health and technically backed by University of Gezira, the newly established university in Sudan.

Why the health area policy?

The main aim of the Medical Director at Umshanig Rural Hospital main aim is to link the hospital with the community and with the primary health care units in its catchment's area in order to provide, effectively, the needed health service. The General objectives included rehabilitation of the hospital to provide medical services and as well to lead the primary care units around. This implies also recruitment of more health personnel and training them at the hospital level. This was followed by establishment of basic units and departments at hospital level to act as focal points for services at hospital and community level. So the school of nursing and units for expanded programs of immunization(EPI), health education, antenatal care and family planning, environmental health, ophthalmology, lab, pharmacy, school health department, and theatre were all established during a period of three years. Then the health area team, actively worked to determine the health problems in the area, to set priorities and to develop the overall plan for health in the area.

The team actively involved in coordination and organization of developmental services provided by governmental and non-governmental actors in the area which has an impact of health. The team involved with interest the community leaders at all level in this movement.

The context and implementation of the initiative:

The context: Umshanig Rural Hospital is located about 25kilometers South-East of Refaah City; and about30kmNorth-East of Wad Medani City. At the apex of the triangle represents its base Refaah and Wad Medani Cities. It follows administratively to Refaah. The hospital is surrounded by a number of villages scattered in a circular shape. These villages have a number of health units and health centers.

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Approval of the project: Both the Minister of Health and Social welfare at that time (Dr. Abdel salam Salih) and the Regional Minister of Health in the Central Region (Professor Mutamud Ahmed Amin) approved and supported the initiative very much. The initiative was also approved by the senior manager at Rufaa. The Regional Minister of Health secured the necessary fund for implementation.

The Pillars of the initiative: The initiative has two main pillars: The preparation of the hospital and its working staff and the preparation of the area. The hospital part was done through the followings:

1. Establishment of the administrative section, nursing school, center for the expanded immunization hospital, health education department, Department of antenatal care and family planning, Environmental Health Section, eye section, laboratory, pharmacy and school health department.
2. Training of all health care workers in the hospital to carry out the vaccination process.
3. Preparation of an operating theatre.
4. Development of internal arrangements to link the treatment of child with his vaccination status.

At the end the hospital was qualified commensurate with the scheme and many departments were added, staffed and equipped. Systems were also put in place like linking the treatment of child with his vaccination status and this indicates that treatment of the child in the hospital requires vaccination first.

The area served by the hospital was prepared as follows:

1. The area was arranged according to the spatial dimension of the villages from the hospital in a circular shape into two groups: Group A which consists of the villages that lie close to the hospital and Group B consisting of the villages following the first group in the next circuit.
2. Recording names and ages of children in villages in each group with preparation of a special book for each village.
3. Mobilization of community leaders and raising their awareness about the importance of the project.
4. Mobilization of voluntary organizations working in the area e.g. Plan Sudan Organization.

Provision of medical and health services:

The preparations at hospital and area level paved the road for provision of services at all levels of the area. Here two examples were highlighted.

Vaccination of children: The coverage was increased to above 90% among the children of the first group of villages. It was more than 70% among children in the second group of villages. Perhaps the reason for the high rate of coverage among children in the first group of villages might be due to the proximity of these villages to the hospital and their association compared to the second group of villages.

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School Health: All schools in the Eastern Gezira Area (Eastern Gezira Locality –for now) were covered, even those outside the area of the hospital. This was performed with the assistance of the Regional Ministry of Health and Plan Sudan Organization.

Bright or Luminous Points:

The initiative was well recognized by the universities and was accredited for students training. Here are two examples:

- The Head of the Department of Community Medicine (Professor Abdulrahman Eltom), Faculty of Medicine at the University of Khartoum, Sudan; sent undergraduate students to study and to be trained at this experience. There was also a postgraduate student of this department who did her MD thesis studying this experiment.
- Faculty of Medicine University of Gezira, Sudan; visited the hospital, studying and evaluating this experience. They sent a number of their trainee to this hospital. They found that was the best way to link the University with the Community. University of Gezira was building its basic philosophy on the community link and participation.

Moreover, a team with a delegation from the **World Health Organization (WHO)** visited the hospital and documented the experience. Later, it was adopted by the World Health Organization as a health system known globally as the health area policy.

Lessons learned:

For any health institute to provide, effectively, health and medical services to its catchments area; must have a strong link with the community and its leaders. Therefore it must be closely linked to them, and thus studies and determines the priorities and objectives, program planning and follow-up, implementation and evaluation, and supervision of field organizer and collects regular information, and coordinates and organizes cooperation between all relevant authorities, motivates and organizes the participation of the community and its leaders effectively and continuously in all phases and aspects of health work.

As a result of this initiative the following points should be considered by medical directors of hospitals:

1. Early establishment of a system linking health institution with the community in the area is mandatory.
2. Widen the scope of the hospital to have a link with all relevant institutions and governmental and non-governmental agencies
3. Widen the scope to health to include preventive, diagnostic and curative.
4. Based on the effectiveness of this experience and the continuous revision of the system of health service in the Sudan, the health care planners are convinced that it is the most suitable system for provision of health system in the country. Eventually it was recently adopted by the MOH and evolved as the main system under the bylaws and rules of the local government system.

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Conclusions:

This work was acknowledged by Ministers of Health (federal and regional) in the eighties of the last century and former workers in the health and medical field and the audience as well as medical and health departments, state and federal. Here are the certificates issued by various actors.

1. Certificate from Prof. Mutamud Ahmed Amin (Regional Minister of Health and Social welfare in the Central Region)
2. Certificate from Prof. Abdulsalam Salih Eisa (Minister of Health and Social welfare, Sudan)
3. Certificate from Dr. Ahmed alBashir Abdala (Director General of the Ministry of Health)
4. Certificate from Dr. Elfatih Mohammad Malik (Minister of State Health)
5. Certificate from Prof. Osman Taha (President of Sudan Medical Specialization Board)
6. Certificate from Prof. Ali Babiker Ali Habour (Dean Faculty of Medicine, University of Gezira)
7. Certificate from Dr. Elfatih Mohmmad Malik (Director General, Planning and International Health, FMOH)
8. Certificate from Dr. Isameldin Mohammed Abdala (Undersecretary FMOH; Sudan - Khartoum)

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: A case Report and Review of the Literature

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Abstract:

Hypokalemic periodic paralysis (hypoPP) is a disorder that causes occasional episodes of muscle weakness and sometimes a lower than normal level of potassium in the blood during the attack. HypoPP is one of a group of genetic disorders that includes hyperkalemic periodic paralysis and thyrotoxic periodic paralysis among others.

A 45 year old male presented with quadriplegia for 1 day of sudden onset following heavy exercise one day before the attack, Laboratory evaluation revealed a markedly low potassium level of 1.7 meq/L, normal thyroid function test , and normal magnesium level .

The patient's paralysis resolved during replacement of his low potassium within 48 hours of ICU admission and he was discharged with no neurologic deficits.

He has a family history of similar condition (1st and 2nd degree relatives).

The case report:

A 45 year-old African male with significant past medical history and family history of similar condition presented to the A/E department with sudden onset quadriplegia and shortness of breath.

The patient awoke up at early morning with muscles cramps and inability to move his upper or lower extremities. The weakness was bilateral and involved both the proximal muscles of the shoulders and hips as well as the distal muscles of extremities. He had respiratory and swallowing difficulty and was able to move his neck and facial muscles. He denied history of trauma . This attack was preceded by history of strenuous exercise one day before. The patient denied any history of vomiting, diarrhea, fever , changing in diet . No history of trauma, He did not take any medications and denied use of alcohol or drugs. His daughter, cousin and his aunt had been exposed to similar attack and diagnosed as familiar HypoPP , based on clinical background and low potassium level .

On physical exam, he was slightly over weight, but otherwise normal in overall appearance. The patient's heart rate was 100 beat per minute , and blood pressure was 110/80, RR 27 breath per minute , he was not pale , jaundiced or cyanosed. There were no deformities or edema of the extremities and distal pulses were present and equal bilaterally. No jugular venous distension, goitre or lymphadenopathy. Cardiac exam revealed normal 1st and 2nd heart sounds and no murmurs. Examination of the lungs and abdomen were unremarkable.

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Neurologic examination revealed hypotonia and hyporeflexia of all extremities which involved the proximal and distal muscles; power grade 2, sensation were intact , coordination difficult to assess .Back examination was normal .

Routine chemistry, liver enzymes , renal functions and complete blood count were normal except for a potassium level of 1.7meq/l, TFT normal. Electrocardiogram revealed sinus tachycardia with 1st degree atrio-ventricular block, and prominent U wave .

The patient was diagnosed as a case of familial hypokalemic periodic paralysis ,and was started on oral potassium supplement and potassium sparing diuretics .He was discharged home in good condition after 2days admission in ICU and 4 days in general ward .

Discussion:

Limb paralysis is a common presentation in both the emergency and outpatient settings. The most common causes of paralysis in ER are : hemiplegia ,cord compression ,Potts disease,GBS .Other causes are rare,e.g.HypoPP so we reported it. Diagnosis of these disorders requires obtaining a complete history with special consideration of timing, duration, and distribution of symptoms.

There are several types of Periodic Paralysis associated with metabolic and electrolyte abnormalities. Of these, hypokalemic periodic paralysis (HypoPP) is the most common with a prevalence of 1 in 100,000 ⁽¹⁾ .The clinical features of the syndrome vary somewhat depending on the underlying etiology but the most striking feature is the sudden onset of weakness ranging in severity from mild , transient weakness to severe disability resulting in life threatening respiratory failure.Attacks may be provoked by strenuous exercise, stress such as a viral illness or fatigue, or certain medications such as beta-agonists, insulin or steroids, or carbonated drinks. A perturbation of sodium and calcium ion channels result in low potassium levels and muscle dysfunction ⁽²⁾ . As this is primarily a problem with muscle contraction rather than nerve conduction, tendon reflexes may be decreased or absent but sensation is generally intact.Although the serum potassium level is often alarmingly low, other electrolytes are usually normal. Indeed, total body potassium is actually normal with the change in the serum level reflecting a shift of potassium into cells ⁽³⁾.Electrocardiographic changes are common, but unlike patients who are truly potassium depleted , the changes do not correlate well with the measured serum level ⁽⁴⁾ . Identification of the problem between paralytic episodes is difficult as the patient may have normal strength and potassium levels. Electromyography reveals abnormalities in some patients but is often normal, especially between episodes when no clinically detectable weakness is present.EMG during weakness typically reveals myopathic changes with reduced amplitude of compound muscle action potential.HypoPP occurs in several settings and the diagnosis may require an extensive search for the underlying etiology since the treatment varies according to the cause. HyoPP may occur sporadically in the form of familial hypokalemic psaralysis (FHP), a poorly understood disorder which may occur

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spontaneously or as the result of autosomal dominant inheritance ⁽¹⁾. This form of Periodic Paralysis (autosomal dominant channelopathy) is due to disordered cellular potassium regulation either due to sodium or calcium channel abnormalities ^(2,5). Mutations of the CACNA1S and SCN4A genes have been identified and cause abnormalities in sodium channels resulting in abnormal potassium ion flux. Acute paralytic episodes are treated with potassium replacement and close monitoring of the cardiac rhythm and serum potassium levels. Spironolactone and acetazolamide have been used for prophylaxis with some success although long-term potassium supplementation may be necessary ⁽²⁾.

Conclusion:

Hypokalemic periodic paralysis is an autosomal dominant disorder which runs through families with occasional episodes of muscle weakness. Oral and intravenous potassium supplementation are usually given and progressive improvement in weakness is suspected. Missing diagnosis of HypoPP may lead to fatal outcomes like respiratory failure and cardiac arrhythmias.

Consent:

Consent was obtained from the patient for publication of this case report .

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