

Oral rehydration therapy and feeding for diarrhea: comparison of Thai pediatricians practice with the Royal College of Pediatricians of Thailand Expert Committee on Gastrointestinal System's Recommendations.

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Abstract

Comparison of pediatricians practice with The Royal College of Pediatricians of Thailand (RCPT) Expert Committee on Gastrointestinal System's Recommendations on oral-rehydration therapy (ORT) and feeding for acute diarrhea, a questionnaire was sent to three departments of pediatrics: Faculty of Medicine Srinakharinwirot University, Police General Hospital and Bangkok Metropolitan Administrative Medical College and Vajira Hospital. Pediatricians recommended variety of oral rehydration solution (ORS) which different from RCPT's recommendations only 10% of respondents used WHO/ORS, 35% used commercial ORS and 55% used any form of ORS. Other form of ORS 45% of respondents used carbonated drinks (nonphysiologic ORS) and 45% used home mixing of ORS. The majority of respondents (55%) recommended ORT for mild and no dehydration, only 15% used ORT as recommended by RCPT. Although WHO and American Academy of Pediatrics (AAP) Committee on Nutrition stated that vomiting was not contraindication to successful of ORT but vomiting was the most common reason (70%) given by respondents for failure of ORT and vomiting was common reason for starvation (30%). Early feeding of appropriate food, 65% of respondents follow the guideline but only 5% of respondents recommended breast feeding for children younger than 1 year old.

บทคัดย่อ การศึกษาเปรียบเทียบ วิธีการรักษาภาวะขาดน้ำด้วยสารน้ำทางปาก และการให้อาหารระหว่างเป็นโรคอุจจาระร่วง โดยกุมารแพทย์กับแนวปฏิบัติการรักษาโรคอุจจาระร่วงของราชวิทยาลัยกุมารแพทย์แห่งประเทศไทย โดยผู้เชี่ยวชาญในอนุสาขาวิชาระบบทางเดินอาหาร

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การศึกษาเปรียบเทียบวิธีการรักษาผู้ป่วยโรคอุจจาระร่วงเฉียบพลันด้วยสารน้ำทางปาก (ORT) และการให้อาหารรับประทานระหว่างเป็นโรคอุจจาระร่วง (early feeding) ของกุมารแพทย์คณะแพทยศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ วิทยาลัยแพทยศาสตร์กรุงเทพมหานครและวชิรพยาบาล และโรงพยาบาลตำรวจ เปรียบเทียบกับแนวปฏิบัติการรักษาโรคอุจจาระร่วงเฉียบพลันโดยผู้เชี่ยวชาญในอนุสาขาวิชาระบบทางเดินอาหาร ของราชวิทยาลัยกุมารแพทย์แห่งประเทศไทย จากแบบสอบถามกุมารแพทย์จากคณะแพทยศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ วิทยาลัยแพทยศาสตร์กรุงเทพมหานครและวชิรพยาบาล และโรงพยาบาลตำรวจ แนะนำสารละลายน้ำตาลเกลือแร่ (ORS) ไม่ตรงกับแนวปฏิบัติการรักษาโรคอุจจาระร่วงเฉียบพลัน มีเพียงร้อยละ 10 ใช้สารละลายน้ำตาลเกลือแร่สูตรที่องค์การอนามัยโลกแนะนำ ร้อยละ 35 ใช้ ORS สูตรสำเร็จรูป (commercial) ร้อยละ 55 แนะนำ ORS ชนิดใดก็ได้ สารน้ำอื่นๆที่ใช้มีน้ำอัดลม (nonphysiologic ORS) ร้อยละ 45 และ ORS ที่เตรียมเองที่บ้านร้อยละ 45 ส่วนใหญ่แนะนำ ORT ใช้รักษาภาวะขาดน้ำน้อยหรือไม่มีภาวะขาดน้ำ มีเพียงร้อยละ 15 ใช้ ORT สอดคล้องกับแนวปฏิบัติการรักษาโรคอุจจาระร่วงเฉียบพลัน ถึงแม้องค์การอนามัยโลก และ American Academy of Pediatrics (AAP) แนะนำว่าผู้ป่วยที่มีอาการอาเจียนสามารถใช้ ORS รักษาได้ แต่ผู้ตอบส่วนใหญ่ (70%) จะไม่ใช้ ORS เมื่อมีอาเจียนและยังใช้เป็นเหตุผลงดอาหารและน้ำทางปาก (30%) การให้อาหารรับประทานระหว่างเป็นโรคอุจจาระร่วงส่วนใหญ่ (65%) สอดคล้องกับแนวปฏิบัติการรักษาโรคอุจจาระร่วงเฉียบพลัน แต่ในเด็กอายุน้อยกว่า 1 ปี มีเพียงร้อยละ 5 แนะนำให้กินนมแม่

Keyword ORT = oral dehydration therapy, RCPT = The Royal College of Pediatricians of Thailand

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Introduction

Diarrhea continues to be important health problem in Thailand especially in children under five year of age¹.

Optimal therapy for diarrhea includes use of ORS, early feeding and antimicrobial agents in indicated cases.^{1,2,3}

In the past 30 years, hundreds of clinical trials carried out in countries have proven the

safety and efficacy of ORT for rehydration of mild, moderate and for maintenance therapy.^{4,5,6,7}

ORT is based on the cotransport of sodium and glucose,⁸ so the ideal ratio of carbohydrate to sodium (CHO :NA) in the ORS should approach 1:1 and excess CHO can produce osmotic retention of water in the intestine with subsequent loss of fluids and electrolytes.^{9,10}

The ORS recommended by the WHO, which includes (in millmoles per liter) Na, 90; K, 20; Cl, 80; base, 30; and glucose, 111; CHO: Na ratio 1.4 : 1

The recommendation of early feeding as an important component of treatment for diarrhea.^{10,11} Appropriate early feeding can reduce stool frequency, volume and hasten recovery.^{12,13,14} Perhaps most importantly, early feeding can improve the nutritional outcome^{10,15} Common foods have been demonstrated to be especially well tolerated during diarrhea include rice and maize^{10,16}

Aim

This study was designed to determine how closely the pediatricians practice on ORT and early feeding to recommendations of RCPT Committee on GI system.

Methods

Questionnaire on practices concerning oral rehydration therapy (ORT) and feeding during acute diarrhea was sent to pediatricians at pediatric department Police General Hospital, Bangkok Metropolitan Administrative Medical College and Vajira Hospital and Faculty of Medicine Srinakharinwirot University.

The questionnaire asked for the types of oral rehydration solution (ORS) and the degree of dehydration treated by ORS. Pediatricians were also asked about the recommendation on feeding they practiced. The responses from the questionnaire were compared with the recommendations of the Royal College of Pediatricians of Thailand (RCPT) Committee on GI system¹

The physiologic solutions of ORS were defined according to WHO/UNICEF ORS, American Academy of Pediatrics (AAP) Committee on Nutrition¹⁰, European Society of Pediatric Gastroenterology, Hepatology and Nutrition¹⁷ (ESPGAN) and RCPT Committee on GI system. The composition of these recommendations show in table 1

Table 1 The summary of electrolytes, glucose, carbohydrate to sodium (CHO:NA) ratio and osmolality of WHO/UNICEF, ESPGAN but no data on osmolality of AAP and RCPT

Mmol /L	WHO/UNICEF	AAP	ESPGAN	RCPT
Sodium	90	75-90	60	45 - 90
Potassium	20	20	20	15 - 25
Base	30	20-30	10	24 - 36
Chloride	80	70-80	>20	50 - 80
Glucose	111	110-140	74 - 111	111
Osmolarity	310	-	200-250	-
CHO: NA	1.2	1.2-1.8	1.2 - 1.8	1.2 - 2.5

Results

Twenty questionnaires were received 7, 7, 6 from Faculty of Medicine Srinakarinwirot University, Bangkok Metropolitan Administrative Medical College and Vajira Hospital and Police General Hospital respectively. All respondents used ORS for treatment of diarrhea. The ORS that respondents used show in table 2.

Home mixing of ORS

Rice-water with some salt was the most common recommendation (44%) among home-mixing of ORS. The total respondents recommended carbonated drinks (CD) were 45%. The respondents recommended unmodified CD, modified by diluted CD to be 1/2 strength and added 1/2 tea spoon of salt and unmodified CD (full-strength) added 1/2 tea spoon of salt in one

Table 2 Summary the reported use of variety of ORS

ORS	No. of recommendation
WHO	2
Commercial	7
Any form of ORS	11
* Home mixing of ORS	No. of recommendation, % ()
1. Rice water + salt	8 (44)
2. Water + sucrose syrup + salt	6 (37)
3. Tea	3 (11)
4. Soup	2 (7)
** Carbonated drink (CD)	No. of recommendation, % ()
1. No modification	9 (43)
2. 1/2 strength of CD + 1/2 tea spoon of salt	9 (43)
3. full strength of CD + 1/2 tea spoon of salt	3 (14)

* Nine respondents recommend home mixing ORS some respondents recommend more than one form of home mixing ORS.

** Nine respondents recommend carbonated drink some respondents recommend more than one dilution of carbonated drink.

Ready made ORS

Commercial ORS were common recommendation of the respondents (35%) only 10% used WHO/ORS and 55% used any form of ORS.

glass of water was 43%, 43% and 14% respectively. These nonphysiologic ORS^{14,18} were used by 70% of pediatricians.

Although the WHO and RCPT Committee on GI system recommended the use of ORS for

treatment of mild, moderate and in severe dehydration before hospitalization. The majority of respondents (55%) recommended the use of ORT only for children having mild and no dehydration, 30% recommended for mild and moderate dehydration. Only 15% used ORT as recommended by WHO and RCPT Committee on GI system.

The WHO and AAP stated that vomiting was not contraindication to successful of ORT but vomiting was the most common (70%) reason given by respondents for failure of ORT. High stool output (25%) and ORS refusal (5%) caused ORT failure as well. The RCPT Committee on GI system and WHO recommended early feeding, most of the respondents follow this guideline (65%) The common reason given by the respondents for starvation was vomiting (30%). There were 5% of respondents did not response this question. Foods recommended for children younger than 1 year, The WHO and RCPT Committee on GI system recommended breast feeding but breast feeding by far recommended only 5% and the other recommended undiluted milk 10%, diluted milk by half of water 5%, lactose free formula 5%, boiled rice 15%, soft diet 15% and boiled rice added some salt 15%.

Discussion

The results of this study indicated that the practice of physician samples from pediatric department Faculty of Medicine Srinakarinwirot University, Police General Hospital and Bangkok Metropolitan Administrative Medical College and Vajira Hospital are different from the recommendation of RCPT Committee on GI system and WHO, it implied the quality of care, so training programme should emphasis on teaching and

approaching consistent with RCPT Committee on GI system and WHO recommendation. It is not clear that how to make rice-water added some salt and sucrose syrup added salt to be physiologic ORT because it needs appropriated container.¹⁰

Several limitation of this study should be considered. The first is samples include only three institutes in Bangkok, so it represents these three institutes. The analysis is based on responses to written questionnaire. There are not patients interview or direct observation. However, this sample of pediatricians could be considered to be knowledgeable groups because they included full-training pediatricians. Although samples obtained from only three pediatric departments in Bangkok but they were institutes that include 1 residency training center, 1 faculty of medicine and 1 teaching hospital so they should know how to use ORT as recommendation above. The low correlation with RCPT committee on GI system and WHO recommendation is not likely to be changed by the nonresponder's pediatricians.

Non-physiologic ORT such as carbonated drinks and tea were recommended to treat acute diarrhea which was potentially ineffective or harmful solutions to the patients. Home mixing ORS may be not meet physiologic ORT because there is no data of the amount of ingredients and appropriate container.¹⁰

The general concept of ORT in treatment of children with mild and moderate dehydration is widely recognized^{1,14,19} but the majority of respondents (55%) recommended use of ORT only for mild or no dehydration and 30% for mild or moderate dehydration. The true rate of usage was likely lower because 70% of respondents believed that vomiting was failure or contraindication of ORS usage, in contrast to



WHO and AAP recommendation. If vomiting was used as a criterion for withholding ORT, the majority of children with rotavirus diarrhea, the most common cause diarrhea in children might not be treated with ORS because vomiting was common symptom in rotavirus diarrhea and in the clinical trials had proven the effective of ORT in rotavirus diarrhea.^{6,20}

WHO-ORS was recommended only 10% respondents imply pediatricians believed that sodium too high may harmful or diarrheal children were likely to refuse WHO-ORS. The recommendation on early feeding, the majority of respondents (65%) followed it. Foods recommended during diarrhea. In children younger than 1 year old, the most commonly recommended food was easily digested food such as adding salt in boiled rice and rice soup (45%), The others were full-strength formula (10%), half-strength formula (5%) and breast feeding (5%) that meaning pediatricians prefer rice to milk. Although there is campaign on breast feeding for a long time and in clinical trial,²¹ by using breast feeding during acute diarrhea showed successful even in rotavirus diarrhea, the respondents recommended breast feeding only 5%. Easily digested food such as boiled rice was the most common choice for feeding. This diet can supply only approximately one quarter to half of child's dialy energy requirement and less of the protein¹⁹ so it may be worse in malnourished child. If tea is recommended, the diuretic effect of caffeine in tea may perpetuate dehydration.

The practices were different from RCPT's recommendation. What are the possible-explanations?. The first is ineffective continue medical education and failure to recognize the problem is another possible explanation. The recommendations should be summarized in table form. Important recommendations on ORT and

early feeding should be highlight as well. Perhaps the most important is lack of emphasis on ORT in academic programs and many pediatricians may be pay no attention on acute diarrhea because it is simple disease. However RCPT Committee on GI system made an excellent recommendation for treatment of acute diarrhea but the important problem is how to implement these recommendation into practice.

Conclusion

Pediatricians practiced so much different from recommendations made by RCPT not only non-physiologic ORS used but also ORT recommended for treatment of dehydration. Vomiting was malinterpret to be the reason for withholding ORT and failure of ORT. This may be the reason why physicians used intravenous therapy for treatment of diarrhea. Breast feeding should be emphasis again because it's nutritious, balance diet and in clinical trial²¹ show successfully as early feeding.

เอกสารอ้างอิง

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