

Comparative Studies of Spinal Celes in Switzerland, Jamaica, and Nigeria, and Possible Relationship with Environmental Pollution.

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SUMMARY

Objective and Background: The need to sanitize our environment from elements hazardous to life on earth is hereby high-lighted, as well as a properly organized and efficiently run prenatal health care system.

Clinical Methods and Materials: From 1975 to 2008, 17 spinal celes (including 2 meningoceles) were routinely repaired in Imo and Ebonyi States of Nigeria, and 5 in Jamaica, the West Indies; none in Basel, Switzerland. All 20 meningomyeloceles were incontinent of urine and faeces, had severe paraparesis to paraplegia, sensory loss in both lower limbs, and bilateral pedes equino-varus in 16 cases. In addition, 2 were hydrocephalic, and all meningomyeloceles were ulcerated. All celes were midline. The meningoceles were normal. The operations were carried out under routine general anaesthesia.

Results: The pre-operation status remained the same in all 20 meningomyeloceles 60 months later, though, they were able to sit up and shift around on their buttocks. The meningoceles remained normal. The hydrocephalus in both cases was arrested. There were no deaths within the hospitalization period of about 14 days.

Conclusion: Vigorous endeavor to sanitize our environment from obnoxious elements (environmental pollution, hazardous waste sites, agricultural chemicals, organic solvents, water disinfection by-products, etc.), good and adequate antenatal care, with antenatal diagnosis of the malformed foetus and termination of the pregnancy, must be strived at, folic acid supplementation must begin before conception.

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INTRODUCTION

The overall incidence of spinal celes in the world is not verifiably known, since a lot of cases from remote areas have not been properly, if at all, documented^{1,2}. However, a Lagos, Nigeria, study by Lesi³ in 1977 reported an incidence of 1.37/

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1000 births. Adeloye and Olumide⁴ also in 1977, noted a 32.3% of spina bifida cystica in central nervous system malformations at Ibadan, Nigeria. Other reports⁵⁻¹⁷ have linked spinal celes to environmental factors

CLINICAL MATERIALS AND METHODS

The author worked in the neurosurgical unit of Kantonsspital, Basel, Switzerland with a catchment area of about 5 million people, including the neighbouring areas of Germany and France, from January 1972 to December 1974, in Kingston Public Hospital, Kingston, Jamaica, the West Indies, with a catchment area of about 4.7 million people, including the neighbouring islands that make up the West Indies, from December 1974 to December 1977; and in Imo and Ebonyi States of South-Eastern Nigeria, with a catchment area of about 5 million, people from January 1978 to May 2008.

There were 5 cases in Jamaica, 17 in Nigeria and none in Switzerland. There were 10 females and 12 males. Only 9 cases were referred by colleagues. The rest came on their own. Their ages ranged from 1 day to 168 days. All the celes were midline. All the meningomyeloceles were ulcerated, had bilateral loss of sensation below L1, were severely paraparetic to paraplegic, and had urine and faecal incontinence. Sixteen of these had skeletal deformities in form of pedes equino-varus. Two cases were hydrocephalic. The meningoceles were not ulcerated and had no gross neurological deficits (table 1). Routine laboratory investigations carried out preoperatively were within normal limits.

No routine radiological investigations were done to save costs. The spinal and spinal cord levels were based purely on clinical findings. At operation, the neural tissue was separated from the adherent overlying scarred skin (Matrix), the matrix was resected, then water tight closure of the dura, enclosing the neural tissues, followed by skin closure; apart from the meningoceles, where, excess dura and skin alone were excised before closure, since the neural tissues were not herniated or adherent. Cultures of ulcerated wounds yielded scanty growth of staphylococcus aureus, sensitive to ampicillin and chloramphenicol.

The repairs were done (Fig 1, 2 and 3) electively routinely within 7 days of admission into hospital under routine general anaesthesia. For different reasons, mostly financial, they could not be done earlier. The patients tolerated the procedures well

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and recovered from the anaesthesia without any additional neurological deficit. They were covered with Chloramphenicol, Vit. B.Co. and other haematinics. Stitches were removed at about 10 days post-operation, apart from 2 cases with persistent infection, 4 and 6 days respectively post-operation. All were discharged home about 14 days after the operations, to return to the out-patients department 7 days later. Physiotherapy was just passive movements of the lower limbs and massage with bare hands, since facilities were not within their reach.



Fig 1

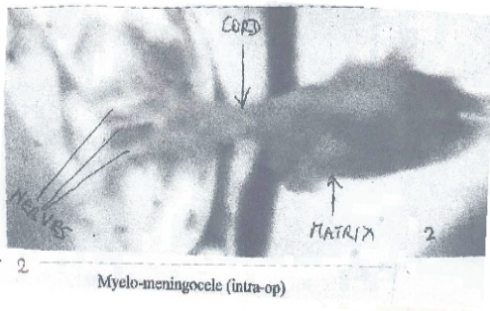


Fig 2



Fig 3

RESULTS

There were no deaths within the period of hospitalization, but one patient was said to have died, 4 days after discharge home, of unknown causes. There were 2 wound dehiscences

after early removal of stitches due to continued wound infection. Healing was achieved with daily dressings.

As can be observed from the attached table 2, follow-up checks were carried out up to 60 months. 17 were followed-up for 12 months and upwards, which we think, was enough time for adequate neurological/skeletal improvement to have taken place. We had just the status quo pre-operation in all cases, though the wounds had healed in all and hydrocephalus in both patients arrested. They were all, however, able to sit up without support and shuffle around on their buttocks on the floor (table 2).

Table 1: Midline Lumbar and Lumbo-Sacral Myelomeningoceles and Meningoceles.

Clinical Presentation	
Ulcerated	20
Midline Lumbar	2
Midline Lumbo-Sacral	20
Bilateral loss of sensation below L1	20
Paraplegia	19
Paraparesis	1
Urine and faecal incontinence	20
Pedes equino-varus	18
Hydrocephalus	2
Normal	2

Table 2: Midline Lumbar and Lumbo-Sacral Myelomeningoceles.

Length of follow-up in months.	3-60
Status when last seen.	
Neurostatus:	Unchanged in all.
Urine and faecal incontinence:	Unchanged in all.
Pedes equino-varus:	Unchanged.
Hydrocephalus:	Arrested.
Wound infection/dehiscence:	None.
Could walk:	None.
Could sit up with support:	5.
Could sit up without support:	14
Could shuffle around on buttocks:	14.
Normal:	2 (meningoceles).

DISCUSSION

From our records, there were no spinal celes operated on in Basel, Switzerland for 3 years, from January 1972 to December 1974, in Jamaica, the West Indies 5 for 3 years from December 1974 to December 1977; and 17 cases in Imo and Ebonyi States, Nigeria for over 29 years from January 1978 to May 2008. This does not mean that there are no such cases in Switzerland or that they occur less in Jamaica than in Imo and Ebonyi States combined or vice versa. We have confirmed that there are spinal celes in Jamaica and Nigeria. The high standard and quality of life in Switzerland, with increased prenatal screening for better detection of neural tube defects, increased intake of foliates¹⁶ before conception and, continued there after, at least, up to 3 months post-conception, very clean environment, where refuse was not exposed and dumped anywhere, like in Nigeria, as experienced and witnessed by the author, are very highly commendable. There were regular sanitary inspections and the

use of opiates and cocaine were not evidently noticeable.

CONCLUSION

Health-management authorities and governments all over the world should assist one another, strive hard to fish out these cases, wherever they may be, and help them get better treatment and management in well staffed and equipped hospitals and rehabilitation centers. Educate the populace as to the possible causes of these lesions: genetics, environmental influences and sanitation, nutrition, ante-natal care and so fort, to reduce or totally eradicate their incidence.

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