VOLUME 21
NUMBER 2
JULY 2008

Journal of the Bangladesh Society of Anaesthesiologists

JOURNAL OF THE BANGLADESH SOCIETY OF ANAESTHESIOLOGISTS

VOLUME - 21 **NUMBER - 2** **JULY 2008**

CONTENTS

Oral morphine

Recent introduction of oral morphine, though only in its sustained release form, has initiated a new era in the field of cancer pain management and palliative care in Bangladesh. Opioids, are on the list of essential medicines for palliative care which was developed by the International Association for Hospice and Palliative Care (IAHPC) on request of WHO [1]. It has been rightly claimed that 'Palliative care anywhere can succeed only if these services can relieve severe pain; thus the adequate and continuous availability and correct use of opioids such as morphine is critically important' [2]. As in many developing countries, it is typical in Bangladesh that cancer is diagnosed in the very late stage when pain is prevalent and often severe[3]. Severe pain destroys a persons quality of life and dignity. Severe pain also affects families, neighbours and the community. A painful death leaves indelible marks in the developing countries where the person with cancer is often cared for in the community and at home[4,5]. In 1986, to address the problem of unrelieved pain due to cancer in the world, the World Health Organisation (WHO) announced a three step method for treating cancer pain that relied on the use of drugs such as morphine for severe pain[6]

It has been repeatedly acknowledged that governments have an obligation not only to prevent abuse, trafficking, and diversion of narcotic drugs, but also to ensure their adequate availability for medical and scientific purposes[7,8]. The International Narcotics Control Board (INCB), in cooperation with governments, endeavours to ensure that there is an adequate supply of these drugs for medical and scientific purposes and to limit their production and use only to such purposes. But ultimately, a number of barriers like legal restrictions, existing drug policy, lack of education and misconceptions amongst medical professionals as well as people in general hinder the availability of morphine sulphate for patients at the levels of supply, prescribing and dispensing.

It is gathered that INCB has allocated 350 kg pethidine , 100 kg morphine and 200 mg of fentanyl for Bangladesh[9]. Oral morphine tablets became available for the first time in Bangladesh in 2006 when one pharmaceutical company was allowed to manufacture 1, 98,530 tablets, each with 15mg sustained release forms using 3 kg of morphine raw material. Of these, 1450 tablets were dispensed during the first year (2006-2007) which rapidly rose to 18000 during the next year (2007-2008) [10]. Understandably, this visible rise was in parallel with initiation and propagation of palliative care service in the country. Acknowledging growing rise in demand of the oral morphine at one end, it also needs to be emphasized that this consumption is only a tiny fraction of the actual requirement of the country.

In the face of this recent availability in morphine tablets, though in a very restricted and limited manner, years of frustrations are giving way to renewed hope and even enthusiasm that palliative care workers in Bangladesh may be able to have the morphine they need to relieve pain in the thousands of cancer patients.

The task does not end by making morphine, particularly the oral form available in the market . Education in its use is required at all levels. The physicians need to realize that pain of patients can be and must be relieved. Patients and their families need to be educated that it is their right to demand pain relief. Our society cares deeply about curing cancer and so we invest a great deal in prevention and treatment. How much do we care about the quality of life of people who live and die with cancer pain! For the majority of people of Bangladesh who remains below poverty line, it is the generic oral immediate release morphine which is obviously the cost effective 'gold Standard' drug of choice[11].

Relief from pain is an act of extreme mercy. As Albert Schweitzer puts it "*we all must die but that I can save a man from days of torture that is what I feel is my great and ever new privilege. Pain is an even more terrible lord of mankind than death itself*"

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(Journal of BSA, 2008; 21(2): 59-60)

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Special Article

'Palliative care is a human right'

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Abstract:

Palliative care is about achieving the highest quality of life (QOL) and promoting comfort and dignity for patients with incurable and life limiting diseases. Palliative care advocacy has been strengthened by pronouncing that 'the provision of palliative care is a human right'. International covenants have agreed upon this. There are huge unmet needs of patients with life-limiting illnesses in Bangladesh as well as in the world. The majority of countries have neither formal palliative care policies nor integrated palliative care services to meet basic standard guidelines in the provision of palliative care. The nature of the right in the context of international and Bangladesh perspective is discussed here.

(Journal of BSA, 2008; 21(2): 76-79)

Introduction:

Treatment of the ill, irrespective of curability or life –limitation, has social, legal and medical sanction and may be considered an essential requirement of a civilized society.

'Palliative care is an approach that improves the Quality of Life (QOL) of patients and their families facing the problems associated with life-threatening illness' through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems- physical, psychosocial and spiritual.' Palliative care is about achieving the highest possible QOL by promoting comfort and dignity[1]

'**Palliative care is a human right'** was the global slogan of the 'World Palliative Care Day' in 2008. The powerful statement needs examination of foundations of legal rights before reaching this assertion.

The international Human right to Health Care

Health is a human right enshrined in numerous human rights instruments.[2,3,4,5] The International Covenant on Economic, Social and Cultural Rights (ICESCR) specifies that everyone has a right 'to the enjoyment of the highest attainable standard of physical and mental health'. The right to health is considered a right of 'progressive realization'.

There is no expressed right to palliative care in these documents as such, but right to health understandably includes health during end of life also. It would be artificial to separate a 'Right to palliative care from general right to health'

Palliative Care: International Statements

In 1992, Margaret Somerville, a scholar of medical law, wrote articles arguing that relief of suffering is a common goal of both medicine and human rights and that the relief of the pain and suffering of terminally ill patients is also a human right[6,7]. Since that, several international statements have been made till date asserting provision of palliative care as a universal human right. These include Cape Town Declaration (2002) [8], European Committee of Ministers[9], International working group of European Medicine(2004) [10], Standing Committee of the Canadian Senate (2005) [11], Pope Benedict XV1 (2006) [12], International Human rights to health care. All these organizations and institutions have asserted officially that palliative care is a human right.

Cape Town Declaration (2002) asserted four main propositions:

1. Palliative care is a right of every adult and child with a life-limiting disease.
2. Appropriate drugs, including strong opioids, should be made accessible to every patient requiring them in every sub-Saharan country and all levels of care.
3. The establishment of education programs as necessary at all levels of the learning continuum.

4. Palliative care should be provided at all levels of care…While primary care is emphasized, secondary and tertiary level teams are needed to lead and foster primary level care.

The Korea declaration[13] emerged from the 2nd Global Summit of National Hospice and Palliative Care Associations in 2005. It stated that governments must 'make access to hospice and palliative care a human right.'

Montreal Statement on the Human Right to Essential Medicines (2005) has clear implications for the provision of palliative care. The statement linked the international right to health with the universal access to these essential medications.

Pope Benedict XVI, in his message for the 2006 World Day for the sick stated that an essential emphasis of palliative care was the preservation of human dignity. He also stated that the provision of palliative care services was a human right.

The ethics of the medical care of the patient with life-limiting illness has a deep humanitarian core. Palliative care is compassionate in approach, meticulous concentration on symptom control, clarity and sensitivity in communication to the patient and family which guide all through the unique journey of dying. So, if there is a clear ethical obligation to relieve suffering – an argument of right can spring from that obligation. WHO has promoted clear public health policies and recommendations for the rational implementation of pain relief and palliative care. So, Palliative care embraces human rights that are already recognized in a number of national laws, international human rights documents, and other consensus statements. Having recognized this, one must admit that the provision of care varies enormously around the world. Many countries do not have palliative care policies or integrated palliative care services.

What are the Palliative Care Rights!

Palliative care is the 'active total care' of patients with life-limiting disease and their families by a multi professional team. Ideally, the care is to be provided by physicians, nurses, physiotherapist, occupational therapist, social worker, religious workers and volunteers. The care encompasses four basic needs of the patients such as physical, psychological, social and spiritual aspects.

Palliative care rights include the right to:-

- Pain relief
- Symptom control for physical and psychological symptoms
- Essential drugs for palliative care
- Spiritual and bereavement care
- Family-centered care
- Care by trained palliative care professionals
- Receive home-based care
- Treatment of disease
- Information about diagnosis, prognosis, and palliative care services
- Not be discriminated in the provision of care because of age, gender, socioeconomic status, geographic location, national status, and prognosis.

What is the Basis of Rights to Palliative Care!

The Content of Obligation:

All the bodies mentioned earlier observed that irrespective of the resources, palliative care remains their core obligation. A further guide to minimum standard expected by the international community emerges from WHO recommendations. These include that all countries should adopt a national policy, ensure the training and education of health professionals and promote public awareness, ensure availability of morphine in all health settings and ensure that minimum standard for pain and palliative care are progressively adopted at all levels of care. Recognizing the widely diverging capacities of countries, WHO set out general recommendations for different resource settings. In countries with medium resources, services should be provided by the primary health care clinics and home based care. In high resource settings, there is variety of options, including home based care.

Synthesizing all these sources a consensus on the content of the obligation on individual governments in relation to palliative care appears to be emerging. The following countries or regions have already incorporated palliative care into their national or regional (state or provinces) health care policies. These are Canada, Catalonia, Kerala, Georgia, Mongolia, Ontario, Uganda, and United States.

Bangladesh Context:

Article 15A & 18(1) of Bangladesh Constitution enjoins on the state the provision of basic medical care for her citizens[14].

Article15 states that 'It shall be a fundamental responsibility of the State to attain, through planned economic growth, a constant increase of productive forces and a steady improvement in the material

and cultural standard of living of the people, with a view to securing to its citizens-

a) the provision of basic necessities of life, including food, clothing, shelter, education and medical care'

Article 18 (1) states that 'The State shall regard the raising of the level of nutrition and the improvement of public health as among its primary duties and in particular shall adopt effective measures to prevent the consumption, except for medical purposes or for such other purposes as may be prescribed by law, of alcoholic and other intoxicating drinks and of drugs which are injurious to health.

The concept of palliative care in Bangladesh so far remained limited to the compassionate tender loving care of the family members toward their loved ones with terminal illness. It would be fair to say that palliative care in Bangladesh is set at a most basic level, where some respite could be sought from the extended family care support system. Although this is being recognized as an essential element, lack of skilled medical attention with all its paraphernalia leaves a big gap in the total care of the suffering. Quality of life (QOL) issues are rarely thought, spoken or practiced in Bangladesh; this is truer for the elderly, especially, for the chronically ill, dying less privileged people. Symptom relief is attempted to be obtained from the local doctors or traditional healers. Besides, the health care system and the community also are driven by a cure oriented approach, where QOL issues are ignored. Regardless of the location, in the urban or rural, public or private setting, the health care service is not oriented towards an organized palliative care service - neither by word nor by philosophy.

Moreover, palliative medicine, in the context of total palliative care does not have its due recognition in this country. Palliative care is not really considered a part of our national, institutional or individual health care approach. Palliative care for patients requires total support from physicians, family and Government. The sick, like other citizens of Bangladesh, have a right to the preservation of health and well-being. The health policy, construction of hospitals and establishment of hospices all follow the same principle. It is the duty of the society to make drugs and arrangement available for the incurably sick members of the society so that the pain of sickness and suffering as a whole is made more tolerable.

Bangladesh with scarce medical resources has strong cultural and ritualistic community and cohesive family support system to tend their terminally ill citizens. These valuable components of care if properly blended with government policy driven medical care, then 'peaceful exit' of many people from a 'helpful society' can be ensured. Community involvement can also empower the family members to address symptom control, like bedsore prevention, appropriate food and basic hygiene etc. Finding ways to empower families and communities in such care is an urgently needed priority. Socioeconomic, cultural and spiritual measures may well be as important as medical ones in providing effective palliative care. But, for this care to reach most of the people there must be a national guideline. Effective program implementation requires clarification of the dimension of the problem and recognition that inexpensive solutions do exist. We must use the knowledge gained in past quarter century of delivering palliative care in a rational public health context. For palliative care to become available to many people who need it, several things must happen. These include effective advocacy and clear policies that support the pain relief and palliative care, education and training of health workers and volunteers, empowerment of family members and affordable drugs-especially oral morphine.

Bangladesh is estimated to have more than 1 million patients with cancer at any point of time. Another million suffer from other incurable diseases like progressive neurological, cardiac and respiratory diseases and HIV-AIDs etc. The total number of patients needing palliative care would be about 0.6 million per year[15]. These patients suffer from severe pain and other symptoms. These ill patients need palliative care as their right. The health care system of the country should help them to deal with their sufferings with importance.

Academic programs are lacking to train practitioners in palliative care for allied health professionals like physicians, nurses, pharmacists, social workers and others. Undergraduate and post graduate education as a symptom control, clinical use of opioids and end of life care remains relatively poor or absent. It is thus obvious that we are in acute need of an organized palliative care service, encompassing all the issues in it (policy, advocacy,

training, fund and ethical issues). Quality of life should be an issue elsewhere in the health service as in the terminally ill patient care.

Certain measures would help to assure the availability of end of life care to the people of Bangladesh. These are to establish a national palliative care policy specific for the country and culture, commitments to educate and train all health professionals by including palliative care in the curricula for physicians, nurses, pharmacists, social workers and others, develop advocacy and education for the public, define freedom from pain as a basic human right, ensure availability of affordable drugs for pain control and symptom management and their appropriate use by trained professionals, to ensure that pain and palliative care programs are incorporated into the country's health care system and to provide interdisciplinary and multi-disciplinary approaches to health care.

Palliative care tries to bring light into the dark world of the dying who are isolated physically and emotionally. While we are increasingly equipped to deal with the challenges presented to us as health professionals, many aspects of serious illness and death are beyond our control. The right to palliative care can only mean reasonable and proportionate response to the need of patients.

Conclusion:

There are huge unmet needs of patients with life-limiting illnesses in the world -obviously more in low resource countries. A human right to palliative care may be implied from even the usual right to health care. For the progressive fulfillment of a human right to palliative care, we need flexible and creative public policy, grater access to opioids for medical purposes, tireless advocacy, comprehensive education, professional leadership and continued call upon individual compassion for this most vulnerable group of people.

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Original Article

Role of oral ondansetron for prevention of postoperative nausea and vomiting in laparoscopy assisted gynaecological surgery - a comparative study

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Abstract:

This study was undertaken to find out the efficacy of oral premedication with ondansetron to prevent post-operative nausea and vomiting in diagnostic gynaecological laparoscopy assisted surgery and to compare it with metoclopramide.

We studied fifty patients of ASA physical status I & II, aged between 18-30 years and body weight between 50-60 kgs. The patients were randomized in equal numbers into two groups; Group A patients were received Tab Metoclopramide 10 mg orally an hour before operation and regarded as control and Group B patients were received Tab Ondansetron (0.15 mg/kg) or total 8 mg orally an hour before operation as case. They received a standard general anesthetic. Post-operative analgesia was provided with per rectal diclofenac sodium (50mg). In the recovery room occurrences of nausea and vomiting was assessed for 24 hours. The incidence of nausea was 80% in Group-A, 24% in Group-B ($p<0.001$) and vomiting was 64% in Group-A, 16% in Group-B ($p<0.001$). The difference among the groups was statistically significant.

Key words: *Laparoscopy assisted gynaecological surgery, PONV, oral ondansetron, metoclopramide.*

(Journal of BSA, 2008; 21(2): 67-71)

Introduction

Postoperative nausea and vomiting (PONV) are among the most common postoperative complaints. Patients undergoing laparoscopy assisted surgery are at high risk for PONV. These are frequently the case of great distress to patients and it is often the worst memory of their hospital stay.[1] The consequences of prolonged PONV range from unexpected admission of day case surgical patients, to physical, metabolic and psychological effects on the patients which slow their recovery and reduce their confidence in future surgery and anaesthesia. Persistent nausea and vomiting may result in dehydration, electrolyte imbalance and delayed discharge. Persistent retching or vomiting can cause tension on suture lines, venous hypertension and increased bleeding under skin flaps and can expose the subject to an increased risk of pulmonary aspiration of vomitus if airway reflexes are depressed from the residual effects of anaesthetic and analgesic drugs.

The incidence and severity of PONV has been decreasing over the last 10 years, due to the identification of precipitating factors, the use of better anaesthetics and preoperative medications, and improvement in operative techniques.[3] Despite these changes, there is still an unacceptable frequency of PONV with incidences of up to 85% reported in some studies.[4] Watcha & White suggested that the incidence of PONV has remained fairly constant for decades with 20-30% of patients suffering from these unpleasant side-effects.[5]

Many drugs have so far been tried to prevent or alleviate this problem. The antiemetics that are currently being used for treatment in our country are prochlorperazine, metoclopramide and promethazine. Antiemetic such as metoclopramide is often used in the control of PONV. It acts peripherally as a cholinomimetic and centrally as a dopaminergic antagonist by enhancing the stimulatory effects of acetylcholine on intestinal smooth muscle, metoclopramide increase lower esophageal sphincter tone, speeds gastric empting, and lowers gastric fluid volume. It also produces an antiemetic effect by blocking dopaminergic receptors in the chemoreceptor trigger zone of the central nervous system. But most of the drugs are associated with undesirable side effects including sedation, hypotension, extrapyramidal symptoms, dysphoria, nervousness and may also cause delayed recovery from anaesthesia.[6]

Ondansetron is a selective competitive 5-HT_3 receptor antagonist with little or no effect on dopaminergic receptors.[7, 8]. It has a good safety profile. It does not appear to cause sedation, extrapyramidal signs or respiratory depression. The most common reported side effect is headache.[9]

Antiemetic prophylaxis may be justified in patients who are at greater risk of developing postoperative nausea and /or vomiting [5] these include patients with a history of previous postoperative emesis, in day case surgical patient and women undergoing gynaecological procedure especially by laparoscopy.

In this study, we have investigated the efficacy of oral ondansetron to prevent PONV in diagnostic laparoscopy assisted gynaecological surgery and to compare it with oral metoclopramide.

Materials and Methods

Fifty female patients of ASA physical status I and II, age between 18-30 years and body weight between 50-60 kg, scheduled to undergo diagnostic laparoscopy assisted gynecological surgery under general anaesthesia were studied. The study protocol was approved by institutional ethical committee of Bangabandhu Sheikh Mujib Medical University (BSMMU). Informed written consent was taken from the patient. They were randomly divided into two groups, twenty five patients in each. The randomization was done by blind envelop methods. Patients with persisting vomiting, received any antiemetic within 24 hours before surgery, expected to have a nasogastric tube after surgery, renal, hepatic, cardiovascular, metabolic or endocrine dysfunction, history of motion sickness.

Patients belonging to Group-A patient were received Tab Metoclopramide 10mg orally an hour before operation and Group-B were received Tab ondansetron (0.15 mg/kg) or 8 mg orally an hour before operation,

On arrival of the patients in the operation theatre IV line was inserted and pulse rate, blood pressure and respiratory rate was recorded. Oxygen saturation was measured by pulse oximeter. The patients were pre-oxygenated for three minutes and induction was done with thiopentone 4-5 mg/kg and fentanyl 1μg/kg, tracheal intubation was facilitated by suxamethonium 2 mg/kg and general anaesthesia was maintained by halothane 0.5%, N_20 60% and O_2 40%. Non-depolarizing muscle relaxant Inj vecuronium 0.1 mg/kg. was used for subsequent muscle relaxation. Intraoperative proper hydration was maintained with Lactated Ringers Solution. At the end of operation, residual effect of muscle relaxant reversed by Inj. Neostigmine 0.04 mg/kg plus Inj. Atropine 0.02 mg/kg.

Analgesia was provided with per rectal diclofenac suppository (50mg) before extubation. The 24 hours study period was begin upon entry to the recovery room. The number and time of emetic episodes and the number & time of rescue antiemetic treatments will be recorded. The rescue protocol constituted of metoclopramide 10 mg injected once and repeated once if either nausea or vomiting continued for the next 10 minutes. Patients were carefully observed for any adverse effects like sedation, drowsiness, flushing or any extrapyramidal symptoms.

Statistical Analysis:

All data were complied and analyzed for statistical significance using unpaired student's t tests or Chi square tests. $P<0.05$ (CI 95%) were considered as statistically significant.

Results

Observations of the present study were analyzed in the light of comparisons among the subject groups (Group-A, Group-B; each group having n=25). All results are expressed as mean ± SD. The studied groups became statistically matched for age ($p=0.458$), weight ($p=0.113$), duration of surgery ($p=0.907$).

Table-I

Demography of studied population

Parameter	Group-A N=25	Group-B N=25	P value
Age in years	27.7 ± 4.39	25.8 ± 4.66	0.458
Body weight in kg	56.0 ± 3.23	53.5 ± 3.34	0.113
Duration of surgery in min	30.5 ± 6.85	30.9 ± 5.70	0.907

Values are expressed as mean ± SD. Between groups analysis were done by unpaired student's test (CI=95%).

Table-II

Changes of heart rate

Group/Time	Base line	At induction	At recovery	Postoperative period
Group-A	84.6 ± 7.42	93.0 ± 8.1	109.0 ± 14.02	89.20 ± 3.52
Group-B	74.3 ± 6.05	91.0 ± 9.2	112.0 ± 12.0	82.0 ± 7.42
P-value	0.016	0.62	0.761	0.009

Values are expressed as mean ±SEM. Between groups analysis were done by unpaired student's test (CI=95%).

Table-III

Changes of systolic blood pressure in two groups

Group/Time	Base line	At induction	At recovery	Postoperative period
Group-A	111 ± 13.7	131 ± 14.0	131 ± 13.0	117.5 ± 7.90
Group-B	116 ± 13.29	128 ± 12.3	134.0 ± 21.0	123.5 ± 14.34
P-value	0.44	0.341	0.561	0.29

Values are expressed as mean ±SEM. Between groups analysis were done by unpaired student's test (CI=95%).

Variation of heart rate (beats/min) is displayed in Table-II. The baseline heart rate in group-A is 84.6±7.42 and in group-B 74.3±6.05 (p=0.016) and postoperative period (group-A: 89.20±3.52 and group-B: 82.0±7.42, p=0.009) significantly varied among the groups. But heart rate variation at induction (in group-A: 93.0±8.1, in group-B: 91.0±9.2, p=0.62) and at recovery (in group-A 109.0±14.02 and in group-B 112.0±12.0, p=0.761) were not significant.

Systolic blood pressure changes were recorded as mm of Hg by non invasive automated blood pressure monitor at 5 minutes interval in the intraoperative period and at 30 minutes interval in the post operative period for first 24 hours in the post operative room. The values are presented at four points as per protocol. Systolic blood pressure variation at base line in group-A was 111±13.7 and was 116±13.29 in group-B (p=0.44), at induction (in group-A 131±14.0 and in group-B 128±12.3, p=0.341), at recovery (in group-A 131±13 and in group-B 134±21.00, p=0.561) and in postoperative room (in group-A 117.5±7.9in group-B 123.5±14.34, p=0.29) are not significant between the groups.

Table-IV

Changes of diastolic blood pressure in two groups

Group/Time	Base line	At induction	At recovery	Postoperative period
Group-A	72 ± 8.86	89.0 ± 3.99	90.0 ± 7.36	76.9 ± 8.19
Group-B	68.5 ± 9.44	87.0 ± 3.5	91.0 ± 3.19	75.5 ± 8.95
P-value	0.372	0.423	0.513	0.666

Values are expressed as mean ±SEM. Between groups analysis was done by unpaired student's test.

Diastolic blood pressure changes were recorded as mm of Hg by non invasive automated blood pressure monitor at 5 minutes interval in the intraoperative period and at 30 minutes interval in the post operative period for first 24 hours in postoperative room. But the values are presented at four points as per protocol. Diastolic blood pressure variation at base line (in group-A: 68.5±9.44, in group-B: 72±8.86, p=0.372), at induction (in group-A: 87.0±3.5, in group-B: 89.0±3.99, p=0.423), at recovery (in group-A: 91.0±3.19, in group-B: 90.0±7.36, p=0.513) and in post operative room (in group-A: 75.5±8.95, in group-B: 76.9±8.19, p=0.666) were not significant (P>0.05) between the groups.

Table-V

Sedation score in post operative period in two groups

Sedation Score	Group-A	Group-B	P-value
0	10 (40%)	20 (80%)	0.01
1	13 (52%)	3 (12%)	0.001
2	2 (8%)	2 (8%)	0

Values are presented as frequency. Within parenthesis are percentages over column total. Analyses were done by chi-square test. Values are regarded as significant if p<0.05 (CI-95%).

Sedation score after one hour post operatively varies from 0 to 2 for both the groups. In group-B, it was 0 for 80%, 1 for 12%, and 2 for 8% patients respectively, In group-A, it was 0 for 40%, 1 for 52% and 2 for 8% patients respectively and was statistically significant (p<0.05).

Table-VI

Nausea and Vomiting in post operative period in two groups

Variable	Group-A	Group-B	P-value
Nausea	20 (80%)	6 (24%)	0.001
Vomiting	16 (64%)	4 (16%)	0.001

Values are presented as frequency. Within parenthesis are percentages over column total. Analyses were done by chi-square test. Values are regarded as significant if p<0.05 (CI-95%).

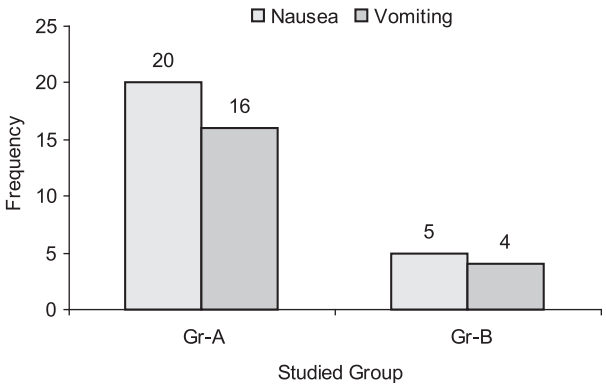

Fig.-1: *Frequency of nausea and vomiting in two groups*

The incidence of nausea was 24% in Group-B, 80% in Group-A (p=0.001) and vomiting was 16% in Group-B, 64% in Group-A (p=0.001). The difference among the groups was statistically significant.

There was no complication like flushing or any extrapyramidal symptoms in both the groups.

Discussion

Nausea and vomiting are common postoperative complaints and some times dangerous side effects following surgery under anaesthesia. Most of the incidents of nausea and vomiting occur during the first two hours of recovery from anaesthesia.

The aetiology of PONV is multifactorial. Factors associated with an increased risk of postoperative emesis include age, gender, obesity, previous history of motion sickness or postoperative vomiting, anxiety, gastroparesis, pain, hypoxia, type of anaesthetic, hypotension and type and duration of the surgical procedure. In the present study concern factors are type of anaesthesia, female patient and type of surgery (gynaecological laparoscopic surgery). Incidence of nausea and vomiting is two to three times more in female due to changing endocrine environment, which sensitize the brain stem emetic mechanism. During laparoscopic surgery the effect of pneumoperitonium as well as some traction of vagal innervated gut may play role in triggering emesis. So patients undergoing gynaecological laparoscopy assisted surgery are at high risk for postoperative nausea and vomiting.

The antiemetics are now mainstay of therapy to prevent nausea and vomiting. The introduction of 5-HT_3 receptor antagonist in 1990s was heralded

as a major advance in the treatment of PONV because of less adverse effects that were observed with commonly used traditional antiemetic.

Malins et al. have also studied the efficacy of ondansetron compared with metoclopramide.[10] One hundred and fifty patients were given oral premedication 1 hour before gynaecological laparoscopy with ondansetron mg, metoclopramide 10mg or placebo. There was a significantly greater number of asymptomatic patients in the ondansetron group in the 48 hours after operation compared with the other two groups (74%, 58% and 50%, respectively ($p<0.05$). The average duration of anaesthesia was 21 minutes. The number of patients receiving rescue anti-emetic treatment was 38%, 57% and 68% respectively. There was no significant difference between the groups with respect to heart rate, systolic and diastolic blood pressure.

In our study, incidence of nausea and vomiting in group-A (those received ondansetron) were 24% and 16% and in group-B (Those received metoclopramide) were 80% and 64% that means asymptomatic patients in group-A is 76% in comparison to group-B is 20% ($p=0.001$). The average duration of anaesthesia was 30 minutes. In our study no patients received rescue anti-emetic treatment because there was no intractable vomiting (vomiting those occurred was 1 to 2 times only). Heart rate differences among the groups at base line ($p=0.016$) and postoperative period ($p=0.009$) was significant Systolic and diastolic blood pressure differences among the groups were not significant ($p<0.05$).

The difference in the results of asymptomatic patients in our study 20% compared with those of Malins et al. 58%, may be explained by; a small number of population and the mean duration of anaesthesia was greater in our study. Heart rate variation among the groups at base line and in post operative period were significant, may be explained by, a small number of patients.

Sedation score after one hour post operatively varies from 0 to 2 for both the groups. In group-A, it was 0 for 80%, 1 for 12%, and 2 for 8% patients respectively, In group-B, it was 0 for 40%, 1 for 52% and 2 for 8% patient respectively and was statistically significant ($p<0.05$). It may be explained that patients of Group-B was more sedated.

Conclusion

Under the condition of the present study we found that oral premedication with ondansetron 8 mg is more effective and produce fewer side effects than metoclopramide 10 mg in preventing postoperative nausea and vomiting after laparoscopy assisted gynaecological diagnostic procedure.

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Original Article

Comparative study between lumbar epidural and spinal anaesthesia in elective caesarean section: comparison of maternal status during operation and in the post operative period

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Abstract

The caesarean section (C/S) is preferably done under regional techniques like spinal and epidural anesthesia. Both these techniques are also preferable to general anaesthesia which allows the mother to remain awake during caesarean delivery. After the approval of the institutional ethical committee, sixty (60) patients were equally divided into group-I (Spinal group) and 'group-II (Epidural group). The intra-operative hemodynamic parameters (blood pressure & heart rate) and any event like nausea, vomiting, discomfort, shivering and the overall maternal satisfaction were compared between the groups. During post operative period mothers were interviewed for pain relief and choice of anesthetic technique. The mothers were also interviewed regarding their experiences of present anesthetic technique in comparison to the previous experiences. All data were analyzed statistically. The epidural group is significantly superior to spinal group in maternal satisfaction, frequency & magnitude of hypotension and postoperative pain relief. The hypotension that was needed to be treated with vasopressor was significantly different between the two groups (Spinal 33.33%, Epidural 10.00%, P<0.05). There is no significant difference between the groups regarding the analgesic requirement. The mothers of epidural group had chosen the technique and recommended this as the ideal technique for elective CS. But the time taken to start operation after the epidural anaesthesia was longer than spinal technique. The prolong onset to start the operation is an opportunity to make rapport between the mother and the anesthesiologist.

(Journal of BSA, 2008; 21(2): 61-66)

Introduction:

A Cesarean Section (CS) is usually performed when a vaginal delivery would put the baby's or mother's life at risk. But in recent times it is also performed upon request of mother. In case of an elective CS, there is enough time to evaluate the mother and to determine the type of anesthesia. Regional anesthesia has the advantage over general anaesthesia by allowing mother to remain awake during delivery. Postoperative pain is also better managed with regional anesthesia. More over, in regional anesthesia, the parents are able to share the experience of delivery, which may enhance parents-baby bonding[1]. Beside this, anesthesia related maternal mortality is also decreased when CS is done under regional anesthesia[2, 3]. In UK, the fall was 12.8 to 1.7 per one million live births and in USA, it was 4.3 to 1.9 per one million live births between the late 1970s and the late 1980s. This is believed to be partly due to the increasing use of regional anesthesia for cesarean delivery[4]. Therefore regional anesthesia (spinal or epidural anesthesia) for elective cesarean section is becoming popular to the anesthesiologists considering the risks and benefits of the mother and her fetus.

But regional anesthesia is not without side effect. Potential adverse effects common to both spinal and epidural anesthetic techniques include: failure to provide adequate anesthesia, maternal hypotension, post dural puncture headache (PDPH), itching and transient backache over the injection site etc[5]. Rare but serious complications include meningitis, compression of the spinal cord from a blood clot or abscess and damage to nerve roots causing paresthesia or weakness. Recently spinal needles are designed to minimise the incidence of PDPH[5].

The epidural needle is also designed to minimize dural puncture[6]. However, some women prefer general anesthesia as they wants to be asleep during the operation. General anesthesia may also be required for elective cesarean sections if regional anesthesia is contraindicated.

Though both spinal and epidural techniques are the popular regional anesthesia for CS; but the acceptability differs in different region of the world in different time. The epidural technique was the regional anesthesia of choice for cesarean section in North America in 1992, but this popularity had changed from epidural to spinal anesthesia by 1997[7]. In UK, spinal anesthesia has been a preferred technique in the last decade[8]. In a recent hospital survey (total 37,000 births a year) in the South-West Thames region of the UK, the rate of regional anesthesia for elective cesarean section was 94.9%, with spinal anesthesia being used in 86.6% of these cases[9].

According to ASA guidelines there are no decisive answer to the choice spinal or epidural block. Literature is also unable to give a definitive suggestion about preciseness of regional technique for caesarean section. The choice now depends on maternal wishes, mother and fetal condition and the preference of the anesthesiologist. Aim of our study was to find a suitable type of anaesthesia for elective caesarean section which would be more comfortable, feasible and acceptable to the mother and also friendly to the fetus.

Patient and Method

The institutional ethical committee approval and written informed consent from sixty (60) patients were obtained for this prospective randomized controlled clinical trial (RCT). The patients had the normal history of singleton pregnancy and an ASA physical status I & II. Pre-anaesthetic assessments were done on the day before surgery. The patients with suspected or manifest bleeding disturbances, gross abnormality in vertebral column, infection in the back, presence of liver and kidney diseases, patient taking anticoagulant and patient with pregnancy induced hypertension (PIH) or preeclamptia were excluded from the study. The patients selected for the study was divided into two groups: **Group – I (Spinal):** 30 Patients selected, **Group** – II **(Epidural)**: 30 patients selected. The patients were briefed about the study and the procedure and a token of serial numbers were asked to draw from a basket. The odd numbers were considered as the "spinal group" and the even numbers were considered as the "epidural group".

At the day of operation, a patient was brought into the operating theatre, allowed to lie down in left lateral position. The base line BP, HR and SpO_2 was measured and recorded. An intravenous channel was established with a wide bored (18G) cannula and then the patients were pre-loaded with Hartman's solution at the rate of 15ml. per Kg. body weight in 30 minutes. According to the number of the token which she obtained on the previous day, anesthetic technique was employed.

The parturient of Group-I received 10mg of hyperbaric bupivacaine 0.5% (2 mL) intrathecally. A Whitacre 25-gauge spinal needle was used at the L_{2-3} or L_{3-4} interspace in the left lateral position. After spinal anesthetic technique, the patient was turned to supine position and a pillow was placed under her head. The operating table was immediately tilted 15 degree to the left, and a urinary catheter was inserted.

An 18-gauge Tuohy epidural needle was used in Group-II. After aseptic wash and sterile draping, the Tuohy epidural needle was introduced into the epidural space through L_{2-3} or L_{3-4} inters-pace applying loss of resistance technique. Keeping the needle in the epidural space, 3 ml of 2% lignocaine was given through the needle and then an epidural catheter was inserted carefully. The epidural catheter was fixed after keeping 3 to 5 cm in the epidural space with the tip directed cephalad. Then the patient was turned in supine position. After confirming the position of the catheter tip, a mixture of 10 ml of 0.5 % isobaric Bupivacaine, 5ml of 2% Lignocaine, 1 ml (50 micrograms) Fentanyl was injected gently. After few minutes the quality of sensory and motor block was assessed.

Oxygen 4 L/min was administered through a facemask until delivery. Hypotension was treated with ephedrine and additional IV fluids. The Hypotension was defined when systolic blood pressure was below 90 mm Hg or 30% decrease in systolic pressure from the baseline value. Oxytocin 5 i.u. were administered IV after delivery.

During operation, ECG and SpO_2 were continuously monitored. Haemodynamic parameters including systolic arterial pressure (SAP), diastolic arterial pressure (DAP), mean arterial pressure (MAP) and heart rate (HR) were measured every one minutes until the birth of the child and thereafter every five minutes until the patient were moved to the postoperative ward. The level of sensory and motor blockade was assessed along with the other parameters. Maternal satisfactions was measured using the following scale –

Table-I

10 point's maternal satisfaction score, 2 points for each parameter.

Parameters	Score of 2	Score of 1	Score of 0
1. Nausea/Vomiting	No nausea	Nausea	Vomiting
2. Chest pain	No chest pain	Some heaviness	Pain
3. Restlessness	Calm and quite	Apprehended	Restless
4. Lower limb discomfort	No discomfort	Mild discomfort	Severe discomfort
5. Shivering	No shivering	Mild shivering	Severe shivering

Table-II

Level of maternal satisfaction: *The 10 points maternal satisfaction score was divided into 3 categories:*

Maternal satisfaction	Score
Highly satisfied	score 8 – 10
Fairly satisfied	score 5- 7
Not satisfied	score < 5

In spinal group, post operative analgesia was maintained with intramuscular opioid and NSAID. But in epidural group, mixture of bupivacaine and fentanyl was administered through the epidural catheter to manage post operative pain. Pain and side effects were recorded at 3 hours interval for 24 hours post operatively. The investigators were blinded to the study group.

The patients were visited during the first postoperative day and were interviewed with the following questionnaires –

1. Did you feel any pain or discomfort during operation? **Yes/No**
2. Would you like to have similar anesthesia for future Cesarean delivery? **Yes/No**
3. Would you like to suggest this type of anesthesia for Cesarean delivery? **Yes/No**
4. Have you got any previous experience of CS? **Yes/No**
5. Is the last experience of anesthesia better from that one? **Yes/No**

For statistical analysis, the unpaired't' test and X^2 test for quantitative and categorical data, respectively, were used with SPSS Version 9.0. $P < 0.05$ was considered significant.

Results

The two groups were similar for age and weight (Table - III.

The base line hemodynamic data were analyzed by comparing blood pressure (BP) and heart rate (HR) between the groups. There is no significant difference between the two groups as shown in Table IV.

Table – III

Demographic data.

Variables	Spinal group (n = 30)	Epidural group (n = 30)	't' value	P value
Age (Yrs)	26.7 ± 4.46	25.7 ± 3.10	1.00	0.323
Weight (Kg)	62.6 ± 4.07	61.33 ± 6.20	1.09	0.280

Mean ± SD; $P < 0.05$ – significant.

Table – IV

The baseline values of mean BP and Heart rate

Variables	Spinal group (n=30)	Epidural group (n=30)	't' value	P value
SBP in mm of Hg	117.58±12.08	119.30±1195	0.541	0.336
DBP in mm of Hg	77.56±9.63	78.24±9.21	0.295	0.241
MAP in mm of Hg	92.5± 6.47	93.7 ± 5.30	0.786	0.435
HR in beats per min.	80.3± 7.29	82.45±6.25	1.226	0.225

Mean ± SD; $P < 0.05$ – significant.

During operation, Blood Pressure (BP) was a fall in both groups. The falls were rapid and marked in spinal group than the epidural group. Hypotension that was needed to be treated with vasopressor was significantly different among the two groups (Spinal 33.33%, Epidural 10.00%, P = 0.0283). There is no significant difference between the two groups regarding the analgesic requirement (Spinal 13.33%, Epidural 10.00%, P = 0.987). Additional analgesics were required for 04 (four) patients of the spinal group and 03 (three) patients of the epidural group. (Table V).

Maternal satisfaction is significantly high in Epidural than in Spinal group. P value is equal to 0.004. (Table VI).

In Spinal group, 20 (68.97%) patients complained of pain in the first night of the post operative period; while in epidural group the figure was only one (3.45%), (P = 0.000). Fifteen patients from spinal group and twenty five patients from epidural group have chosen the current anesthetic technique for their future CS and also recommended as an ideal technique for CS. P value is equal to 0.006 (Table-VII).

In the Spinal group, 14 (48.28%) patients have the experience of previous CS (04 under General anesthesia and 10 under spinal anesthesia) and in the Epidural group the number is 16 (55.17%) (03 under general anesthesia and 13 under spinal anesthesia). There was not a single mother among the two groups, who had previous experience of Epidural technique. (Table – VIII).

Table – V

Comparison of intra operative events

Variables	Spinal group (n = 30)	Epidural group (n = 30)	χ^2 values	P values
Hypotension (needed to be treated with vasopressors)	10 (33.33%)	03 (10.00%)	4.81	0.0283
Additional analgesia	04 (13.33%)	03 (10.00%)	0.01	0.987

P < 0.05 – significant.

Table - VI

Level of maternal satisfaction.

Maternal satisfaction	Spinal group n = 30	Epidural group n= 30	χ^2 values	P values
Highly satisfied	08 (27.59%)	20 (68.97%)	10.84	0.004
Fairly satisfied	16 (51.72%)	09 (27.59%)		
Not satisfied	06 (20.69)	01 (3.45%)		

P < 0.05 – significant; *P <* 0.01 – highly significant

Table -VII

Post operative interview of the mothers.

Parameters	Spinal group N = 30	Epidural group N = 30	χ^2 values	P P values
Complain of pain in the first night	20 (68.97%)	01(3.45%)	21.57	0.000
Choice of anesthesia for future CS	15 (51.72%)	25 (86.21%)	7.63	0.006
Recommended ideal technique for CS	15 (51.72%)	25(86.21%)	7.63	0.006

P < 0.05 – significant; *P <* 0.01 – highly significant

Table – VIII

Numbers of mothers having previous CS.

	Previous CS under					No H/O CS	Total
	GA	Spinal	Epidural	Others	Total	15	29
Spinal	04	10	00	00	14		
Epidural	03	13	00	00	16	13	29

Table – IX

Comparison between the anesthetic techniques of two CS.

Group	The previous anesthetic technique better	The current anesthetic technique better	Both are same	Total
Spinal	02	02	10	14
Epidural.	01	14	01	16
X^2 value		16.64		
P value		0.000		

$P < 0.05$ – significant; $P <$ 0.01 – highly significant

Among the 14 mothers of Spinal group, who had a previous experience of anesthesia, 02 mothers expressed that the current technique was better than the previous one; another 02 told that the previous technique was better than the spinal anesthesia and the remaining 10 mother considered that the both techniques were equal. On the other hand, out of 16 patients of Epidural group, 14 patients were in favor of current (Epidural) technique, one patient said that previous (Spinal) one was better and one mother found no difference between the techniques of anesthesia. (Table – IX).

Discussion

The regional anesthetic techniques are widely accepted for elective cesarean section. In the study we tried to find out an ideal regional technique considering better outcome of mother. The parameters taken into account to compare the two techniques are- hemodynamic stability, need for additional analgesics, maternal comfort, postoperative pain management, and overall maternal satisfaction. The present and previous experiences of mothers were also compared. Recommendation of the mothers about anesthetic technique for CS has also been taken into account.

The hemodynamic instability is one of the most common concerns in both the procedures. There was a fall of blood pressure in both techniques. The proportion was more in spinal anesthesia where the fall was rapid and marked, which was treated with vasopressor and/ or additional intravenous fluid to maintain optimum level of blood pressure. This is comparison to the study done by Scott in 1995[8]. The fall of blood pressure in the epidural group was also marked; but the total number of patient is significantly less than that of the spinal group ($P<0.05$). The fall of blood pressure in epidural group was slow, not rapid. This was also found in the study of Scott[8]. No abrupt change of heart rate was observed in either groups. This was probably due to prompt management of hypotension by vasopressor and fluid.

Regional anesthesia results in less neonatal exposure to drugs[7]. But with Spinal technique the potential for hypotension poses the greatest threat to the mother and fetus[7]. Although the incidence of hypotension is not infrequent in epidural technique but it occurs earlier and more rapidly with the spinal approach. Hypotension lowers maternal mean arterial pressure (MAP) and uteroplacental perfusion[8].

In the regional techniques the mothers were not given sedation until the baby was delivered. So, up to the time of delivery, the mother remains awake. Maternal comfort at this (or the entire intraoperative) period is important. Hypotension

results from temporary sympathectomy is inevitable. Reduced preload (increased venous capacitance and pooling of blood volume in the splanchnic bed and lower extremities) and reduced afterload (decreased systemic vascular resistance) lower maternal mean arterial pressure (MAP), leading to *nausea*, vomiting and dysphoria[9]. For these reasons the mother may become *restless*. *Shivering* is another known complication of neuroaxial block. There may be acid eructation due to fasting. In addition, there might be epigastric or chest discomfort due to traction of peritoneum during surgery. Numbness may cause *lower limb discomfort* in some mothers. We considered these variables as indicators of maternal comfort or satisfaction. It was found that mothers of epidural group were highly satisfied in comparison to spinal group and the number of mother not satisfied with the anesthetic technique is high in spinal group ($P< 0.01$).

Post operative pain relief was better maintained by continuous infusion of analgesics through epidural catheter. Where as, analgesia in the spinal group was maintained with intramuscular opioids or NSAIDs. Four (13.33%) patients in the spinal group and three (10%) from the epidural group were also required additional analgesics. In the postoperative interview, a significantly higher number of mothers of epidural group ($P<0.01$) told that they did not feel pain on the postoperative night. The mothers who were comfortable in the intraoperative period and those who did not feel pain in the post operative period had choosen the technique for their future cesarean delivery and also recommended the technique as a ideal for elective cesarean section ($P< 0.01$).

The mothers who have previous CS under spinal anesthesia in spinal group said that there was no difference in the anesthetic experiences between the previous and current ones. But the mothers of epidural group regarded the current technique as better procedure (P value 0.000). Unfortunately there was no mother who has a previous experience of epidural anesthesia in both the groups. So, the mothers of spinal group have nothing to compare except few cases of general anesthesia.

Conclusion

The wellbeing of mother mainly depends on haemodynamic stability which could be better achieved with epidural anesthesia. Beside this, post operative analgesia was also better managed with continuous epidural technique which allowed them early breastfeeding and ambulation.

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Case Report

A case of Convulsion Resembling Masseter Muscle Spasm (MMS) during Ceserian Delivery Under Spinal Anaesthesia

Md. Aminul Islam, Sadik Enam Boksh

Abstract

A 28 years old female was admitted to Dhaka National Medical College Hospital (DNMCH) for emergency LUCS under spinal anaesthesia. During peroperative period, the patient developed features like Masseter Muscle Spasm (MMS). The presentation and management are discussed.

Case History

A 28 years old housewife named Nargis Akter was admitted to DNMCH with the complaints of less fetal movement and scar tenderness. Her weight and height were 55 kg and 5' *5"* respectively. She had a previous history of cesarian section under spinal anaesthesia and live female baby. She did not have any bad obstetric history and no history of any complication during the previous operation and anaesthetic procedure. Her Hb% was 10.6gm/dl and her pre-operative blood pressure was 110/70 mmHg. Her pulse rate was normal. She did not have any significant respiratory or cardiovascular abnormality with normal body temperature. She was conscious and no neurological abnormality was present.

After an initial assessment, she was preloaded with about 800 ml of Hartman's solution. Then spinal anaesthesia was administered after proper painting with betadine solution with a 25 gauge Quinke needle in the interspace between the lumber third and fourth vertebra in single shot. Then 2.5 ml (12.5mg) Bupivacaine heavy was administered intrathecally. After 2-3 mins blood pressure was falling rapidly and reached 80/50 mmHg. Then 5mg ephedrine hydrochloride was given intravenously to the patient. Meanwhile the operation was started and incision was made in the lower abdomen and the patient did not complain of any pain.

Suddenly the patient was becoming cyanosed and she tried to tell something but could not speak. Then she was tried to be ventilated by mask with 100% oxygen spontaneously and then by assisting ventilation. But it was not fruitful.

Her pulse rate became very high. Then endotracheal intubation was attempted but failed to achieve due to increased jaw muscle tension & mouth could not be opened. At that stage patient went into shock & no pulse or blood pressure was recordable. Then 100mg suxamethonium was given intravenously and the jaw relaxed within mins & tracheal intubation was done. Immediately l mg. of Adrenaline was given intravenously. The pulse and blood pressure become recordable within 30 sec. General anesthesia was maintained with 40% 0_2 , 60% N_20, 0.4% halothane. A bolus dose of 25mg atracurium was given. After 15 mins the patient was spontaneously breathing. Within that period about 2000m1 of Hartman's solution was given to the patient intravenously & the urine output was about 800ml. The operation was completed within 30mins and the patient was reversed with 2.5 mg of Neostigmine and 1.2 mg of Atropine. At that time the patient was spontaneously breathing.

The reversal was good enough & the patient was haemodynamically stable with post operative blood pressure of 120/90mmHg & pulse rate was 78 beats/min. The patient showed no evidence of further respiratory difficulty and the lungs was clear and the air entry was good. So the patient was sent to post anesthesia care unit. This period was eventless. The patient was stable & sent to the ward.

Discussion:

Masseter Muscle Spasm (MMS) is a major and serious problem to the attending anesthetists as it

Designation ????

causes clinical problem in opening the mouth in order to achieve tracheal intubation. It has got a strong co-relation with Malignant Hyperthermia (ME). The first common use of the term MMS arose when Malignant Hyperthermia reaction subsequently occurred in

patient whose mouths had been difficult to open following the use of suxamethonium. This association was apparent in 70% of patients given suxamethonium who went to develop MH. Awareness of the association between MMS & MH led to the referral of many patients who developed MMS for investigation of their MH status. Of those with MMS as the only abnonnal feature 28% have been proven to be susceptible to MH. The proportion rises to 57% if there were accompanying metabolic features or to 76% if the MMS was followed by other features of muscle damage such as myoglobinurea or severe incapacity from muscle pains. From this experience which is similar amongst MH investigation centres, it seemed clear that, patients developing MMS were at high risk from MH until proven otherwise & MH is still one of the major potential anesthetic hazards despite the mortality rate for NM declining from above 70% before 1980 to below 4% over the past five years.

Suxamethonium is a known triggering agent for MH as well as MMS. Suxamethonium is thought to produce a rapid and marked rise in intracellular calcium concentration but it's duration of effects is limited. The predominant feature is thus increased muscle activity, evident as rigidity.

The muscle rigidity is sometimes generalized, but may be limited to the jaw muscles. The term MMS is therefore of practical & clinical significant only if it's use is restricted to severe and perhaps more prolonged (more then 21 mins) episodes of restricted mouth opening following Suxamethonium administration.

Inhalational anesthetics can also trigger MH as well as MMS. Halothane is the most potent triggering agent. But other inhalational anesthetics like enflurane, desflurane, isoflurane, & sevoflurane can also trigger MH.

Our patient was preoperatively well stable. She did not give any history of metabolic disorder or features of muscle damage. Even though when suxamethonium or halothane was administered to facilitate intubation for conversion of spinal anesthesia to general anesthesia, her body temperature was quite normal. So in this case there is no apparent relation with prolonged masseter muscle rigidity and NM. Our patient received spinal anesthesia & so obviously there was hypotension. But there is no co-relation with MMS & hypotension. The patient experienced a period of hypoxia due to hypotension and ongoing respiratory failure. There is also no evidence of MMS in hypoxamic status. The patient's temperature was quite normal all through the per-operative period & no shivering occurred. So there was no chance of hypothermia induced muscle stiffness.

The local anesthetic that was used for spinal anesthesia is bupivacaine heavy. Bupivacaine has got a wide safety margin & even slow intravascular injection of epidural type may not precipitate convulsion. Early signs of intravascular injection like numbness of the tongue & circumoral area were absent in our patient.

So which factors triggered that jaw muscle rigidity is misleading & not clear as an isolated solitary event. The possibilities may be that it was due to toxic effect of local Anaesthetic or it was possibly more due to hypoxic convulsion due to acute hypotension from a very high up SAB. Convulsion could not be generalized due to the motor blockage of skeleted muscle by SAB in the lower limb and thoracoabdominal region but leaving the masseter muscle unblocked as it is supplied by cranial nerve - Mandibular division of Trigemial nerve. However the final cause of Masseter Muscle rigidity could not be confirmed in this case.

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Journal of BSA, Vol. 21, No. 2, July 2008

Original Article

Nutritional support to critically Ill patient

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Introduction

Nutrition is defined as science of food and relationship to health. It is not a single science but a cluster of sciences related to the production and utilization of food. Critical illness evoke a constellation of metabolic changes in the host including a transitory "ebb" phase followed by a hyper metabolic "flow" phase. Magnitude of the change is proportional to the extent of insult or illness. Those changes require an extra amount of energy in additional to basic metabolic requirement to maintain the nutritional status. If the basic and extra amount of energy cannot be provided, the patient may show diverse systemic functional impairments. Nutrients are needed for protein synthesis, for organ function and to sustain life.[2] Critical illness is usually accompanied by anorexia or inability to eat because of impaired consciousness, sedation or intubations through upper airway. Patients are also metabolically stressed by the severity of the illness. Therefore, without nutritional support there is rapid loss of body weight and muscle mass. American Society for Perenteral and Enteral nutritional has included the following,2,3 (a) detection and correction of preexisting malnutrition, (b)prevention of progressive protein energy malnutrition, (c)optimizing patients metabolic state, and (d)reduction of morbidity and time of convalescence. Nutritional support to critically ill patient in Intensive Care Unit (ICU) must follow the same rules as any other form of treatment with careful appraisal in each patient of likely benefit or harm to be expected from it.[4]

Effects of Malnutrition

The accelerated catabolism associated with acute illness or injury may further exacerbate tissue loss superimposed upon weight loss. Weight loss more than 8% results increasing impairment of function, handicap recovery from disease and multiply its complications.[4] Malnourished persons suffer from muscle weakness and muscle fibers as well as respiratory muscles including diaphragm, impairing respiratory drive, ability to cough and clearing

secretion. [4,5] Malnutrition impaired immune function and increase rate of infection. [6,7,8] Acute

illness and malnutrition also impair the digestive and barrier function of gut and may be protected by enteral feeding.[9] Cardiovascular reflexes, vasoconstrictor responses to cold, heat conservation also affected by malnutrition.[10] Malnutrition also contributes to increased surgical risk, poorer wound healing and slower recovery from surgery.[4] Starvation and the responses to injury and immobility contribute to excess salt and water retention and negative nitrogen balance.

Clinical Decision to Treat

Nutritional support has been shown to be effective in improvement in nitrogen balance, wound healing, restore immune competence, facilitated weaning from ventilator and reduce mortality and morbidity in critically ill patients .3-4

From a consideration of the evidence outlined so far, the following indications for nutritional support are sugested.[4]

a. Weight loss greater than 10 percent and continuing.

b. Continuing inadequate oral intake.

c. The presence of the diseases whose known natural history is associated with accelerated catabolism and poor food intake for 10 days or more.

Nutritional Assessment of Patient

A normal nutritional status is a key element in the ability of a patient to overcome a critical illness. All the traditional markers of malnutrition lose their specificity in the sick adults as a number of non-nutritional factors may affect each. Nutritional

assessment can be done by obtaining dietary history, clinical examination, anthropometry and laboratory investigations.

a. Dietary history: History includes dietary habits, nutrients intake, quality and quantity of food and omission of any major item may lead to malnutrition. Important questions include recent unintentional weight loss (>10%), recent surgical stress, nausea, vomiting, diarrhoea, and the presence of co-morbid illness.

b. Clinical examination: Signs of nutritional deficiency, such as weakness, muscle wasting, loss of subcutaneous fat, skin rashes, hair thinning, pallor, oedema, ascitis, fingernail abnormalities and many other clinical parameters come under practically feasible. Particular signs of specific nutrient deficiencies must be noticed.

c. Anthropometry: Anthropometric measurements are sufficient to define the nutritional status in healthy individuals but may be affected by non-nutritional factors. Therefore, anthropometric measurements must be interpreted with care. Measurement includes body weight, mid-arm circumference, mid-leg circumference, and triceps skin fold thickness etc.

d. Laboratory investigations: Investigations consists those indicate protein status and biochemical tests for micro nutrient deficiencies."

i. Haemoglobin estimation.

ii. Serum total protein.

iii. Serum albumin.

iv. Lymphocyte count.

Routes of Administration of Feed

In deciding upon the rule of administration of feed, the rules are simple. If the gut works, try to use it. If the patient can swallow, try oral supplements or failing this, some form of enteral feeding by a fine-bore naso-gastric tube, Alternative enteral routes to oral feeding can be shown separately as under.

a. Naso-duodenal tubes,

b. Gastrostomy.

c. Jejunostomy tube or catheter-either feeding or percutaneous.

Enteral route of administration may be a good choice among the enteral and parenteral feeding in consideration of the complications of parenteral feeding and advantages of enteral feeding.

Advantage of Enteral Feeding over Parenteral

If the gastrointestinal tract is functional, the tube feeding is easier, safe and less costly than parenteral nutrition. It is possible that enteral feeds may also permit better utilization of nutrients, maintain nntcosal integrity, and decrease the incidence of stress related haemorrhagic gastritis." It stimulates intestinal blood flow. Recent works also suggest that enteral nutrition may lead to reduction on mortality in patients ventilated for prolonged periods.[3] Consequently, when spontaneous oral feeding is inadequate then feeding can be given to all patients except non-functioning gut cases. Enteral feeding has been shown to be gut protective and reduce the associated rise in hapatic enzyme in haemorrhagic shock or endotoxic shocked patient. [2] Patients with blunt and penetrating trauma enteral feeding is better tolerated and associated with a lower frequency of infection within 24 hours. [2] Enteral delivery of nutrients compared to total per enteral nutrition (TPN) may reduce some complication in severely injured trauma patients and has been associated with a decrease in GIT mucosal permeability. [i'] Avoidance of immune suppression and the complications of central venous canula insertion required for parenteral feeding give additional advantage to entral feeding.

Energy Expenditure and Calculation of Energy Requirement

The key decision to provide nutritional support to critically ill patient involves the provision of adequate but not excessive amount of energy. Basal Metabolic Rate (BMR) can be estimated by heat loss using direct calorimetry, which is only possible in laboratory setting. In practice, caloric requirement is estimated by indirect calorimetry, which measures oxygen consumption, and energy expenditure is calculated. Formula like Harris-Benedict equation or other simpler more practical formula can be used to predict the basic energy expenditure." Another 500-1000 kcal should be added for the hyper catabolic state of critically ill patients.

Feed Composition

There has been considerable effort to determine what constitute adequate and optional nutritional

support to critically ill patient. Enteral nutritional supplement should be composed of optimal combination of protein carbohydrate, and fat. The volume, water content, ionic composition and addition of trace elements and vitamins are of great importance. They can be prepared from fresh foods or commercially prepared diets. Many prepared feeds in liquid or powder from are commercially available. These vary in their protein, carbohydrate and fat source, electrolyte, mineral, vitamin content, osmolality and contents of specific nutrients including fiber, branched chain-

1 acid (BCAA), essential am[i]no acid, glutamine, arginine, neucleotides and other nutrients. Lactose-free, isotonic liquid feed providing approximately two-third of non-protein energy as carbohydrate meets the need of most patients. When necessary, such a feed can be modified by the addition of individual carbohydrate protein or fat sources to meet specific need.

Complications Associated with Enteral Feeding

a. Complications associated with feeding tube.
   i. Trauma and bleeding.
   ii. Gastric or bowel perforation.
   iii. Tube obstruction.
   iv. Tube displacement.
   v. Patient discomfort.

b. Complications related to enteral feeding,
   i. Nosocomial infection from bacterial contamination. ii. Nausea, abdominal distension and discomfort. iii. Regurgitation or vomitingg
   iv. Pulmonary aspiration of feed.
   v. Diarrhoea.
   vi. Intestinal pseudo-obstruction.

c. Complications related to feed content.
   i. Hyper and hypoglycaemia.
   ii. Glucose intolerance.
   iii. Azotaemia.
   iv. Hypercarbia.
   v. Electrolyte abnormalities.
   vi. Specific deficiency disorder with long term use.

Monitoring of Patients Receiving Enteral Feeding

a. Clinical
   i. Examine the abdomen for distention and bowel sounds.
   ii. Record the frequency and consistency of stool, and their colour, odour and estimated weight or volume.
   iii. Note patient's complaints of fullness, nausea, vomiting, abdominal pain or tenderness.

b. Blood
   i. Measure blood glucose, blood urea nitrogen and serum electrolyte levels at least twice a week or more frequently if they are abnormal.
   ii. Measure SGOT, SGPT, LDH, serum albumin, bilirubin, calcium, magnesium and, phosphate levels once week. -':
   iii. Measure serum triglyceride and cholesterol levels at least once a week in patients receiving fat in their diets.

c. Urine

Test for glucose for 6 hours and cover with crystalline insulin as follows: 5U for 0.23g/dl, 15u for 1g/dl and 20U for 2g/dl.

Repeat the test hourly for 2g/dl and cover with 20U for 2g/dl every 2 hours. Inform physician if glycosuria lasts for 4 consecutive hours. Then resume feeding with a lesser rate or with a formula containing less carbohydrate.

Present Status of Nutritional Support to Critically Ill Patient in Bangladesh

The method of nutritional support to critically ill patient in different hospitals of Bangladesh is in primitive state. Because we are running shortage of specialist dietetics, lack of knowledge, and other resources etc. There is no organized way of providing nutritional support; moreover, it is difficult to specify a food composition without adequate knowledge about nutrition. As a result present trend is that either the clinician prescribe a branded preparation or patients party prepare a homemade preparation at there own without proper calculation about the patients energy requirement. Many a time's doctors become delayed to start the nutritional support to patient even after several days of admission in

hospital. So there are many scopes remain to work in this area for better improvement.

Conclusion

Patient undergoing treatment in ICU remains in critical state of their health, where provision of nutritional support can ensure a good organ function or cats prevent their functional impairment. Method of nutritional support may vary from individual to individual considering nature of disease process. A team of personnel, which should include clinician, nutritionist, dietetics and cools, should do it. Problem may arise due to lack of coordination between the members of treating committee or absence of such committee. As nutritional support to critically ill patient is an obvious life support; it should be ensured with proper importance and dedication.

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Review Article

Complications of regional anaesthesia with special reference to spinal, Epidural and coudal anaesthesia

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(Journal of BSA, 2008; 21(2): 80-85)

Excellent anaesthesia and analgesia by either intradural (subarachnoid, spinal, intrathecal) or extradural (epidural, peridural, Caudal) injection is among the most versatile regional blocks available today. Either method can be used for a variety of operations on the lower part of the body, the abdomen, the chest and upper extremities. These blocks are used not only for surgery but for pain relief in the postoperative period and during labour and for diagnostic and therapeutic purposes. Compared to general anesthesia, regional anesthesia offers numerous opportunities for better pain control and patient satisfaction. Modern regional anaesthesia offers low morbidity and mortality rates. As regional anesthesia continues to gain acceptance, providers must be prepared to diagnose and treat any complications that may arise with the use of blocks. In Franace, the number of procedures performed annually has increased twelve fold between 1980 and 1996 associated with numerous advantages and with very few severe complications[1]. Many anesthesiologists perceive regional anesthesia to be a safer and shorter recovery times compared to general anesthesia [2, 3.]

However, significant morbidity may directly result from regional anesthesia. The incidence of cardiac arrest associated with spinal blockade has been reported to be as much as 0.06% and frequently results in death or brain damage[4, 5].

The term 'Spinal Anaesthesia' was coined in 1885 by J. Leonard Corning a New York neurologist. Fourteen years passed before spinal anaesthesia was performed in a surgery. Renowned German surgeon Professor August Bier introduced spinal anaesthesia by allowing his assistant, Dr Hildebrandt, who volunteered to be the subject of second attempt, for cocaine injection into his own spine. He also gave classical description of the post dural puncture headache (PDPH) which he latter suffered[3]. Ferdinand Cathelin and Jean Sicard introduced caudal epidural anaesthesia in 1901.Lumbar epidural anaesthesia was described first in 1921 by Fidel Pages and again in 1931 by Achille Dogliotti. Complications from the use of regional anesthesia have been reported from the onset of its use. 'Aseptic meningitis' were described as early as 1936; it was not until the now infamous 'Wooley and Roe' cases in 1947 that these complications were highly publicized and in 1954 led to the almost virtual abandonment of spinal and epidural techniques in Britain for more than two decades[2]. In these cases, two relatively young healthy males became paraplegic after spinal anaesthesia secondary to contamination of the syringes and spinal needles by an acidic descaler[4]. Ever since, Anaesthesiologist continues to improve and modify this technique to increase safety and reduction of complications.

Complications are

- Technical- Related to insertion of the needle/ catheter.
- Associated with positioning of the patient.
- Local anaesthetic toxicity.
- Excessive spread.
- Those of specific techniques.
- Infection and inflammation.
- Due to bleeding

Patients must be informed regarding risks associated with regional anaesthesia from block failure to neurological injury and death. As one recites this list, the actual likelihood of suffering this complication is often not well communicated to the patient.

A report from Chadwick, et al. in 1991 looked at malpractice claims filed against anaesthesiologists in a 10-year period from 1975-1985[6]. A comparison was made between obstetric and non-obstetric claims related to general and regional anaesthesia. A total of 1,541 cases were reviewed, of which 12% were obs-related and 88% were non-obs related claims. The following comparisons were made regarding the types of injuries claimed.

Table-I

Malpractice claims against anaesthesiologists:

Complications	non –ob claim % (n=1,351)	ob claims % (n=190)	ob-regional % (n=124)	ob-general % (n=62)
Patient death	39(524)	22(41)	12(15)	42(26)
Neonatal brain damage		20(38)	19(23)	24(15)
Headache	1(10)	12(23)	19(23)	0(0)
Neonatal death	<0.5(1)	9(17)	7(8)	10(6)
Pain during anesthesia	<0.5(5)	8(16)	13(16)	0(0)
Patient nerve damage	16(209)	8(16)	10(12)	7(4)
Patient brain damage	13(174)	7(14)	7(9)	8(5)
Emotional distress	2(30)	6(12)	7(9)	5(3)
Back pain	1(8)	5(9)	7(9)	0(0)

This Meta analysis demonstrated that patient's death, nerve injury and brain damage were more common in the non-obstetric population due to general anaesthesia. However among the obs-population, claims more for trivial events-headache, pain during anaesthesia, emotional distress and back pain receiving regional anaesthesia. Major complications are more frequent in general anesthesia .Report on Confidential Enquiries into Maternal Deaths in the United Kingdom 1988-1990, there were 4 deaths directly attributable to anaesthesia[7]. One was due to pulmonary complications which occurred after aggressive treatment of hypotension in a patient with an underlying cardiac arrhythmia. This patient had an epidural anaesthetic and it was felt that the sympathectomy could have contributed to the failure at resuscitative efforts [7].

Swedish experience:

Table-II

Several complications from intrathecal, epidural and caudal blockades reported to the Swedish patient insurance during 1980-1984.

Complications	Type of Anaesthesia			
	Epidural blockade	Intrathecal blockade	Caudal blockade	Blockade and general anaesthesia in combination
Deaths	1	-	-	-
Brain damage	1	-	-	1
Symptoms of cauda equina lesion	12	20	2	5
Spinal or epidural haematoma	2	-	-	-
Subdural haematoma	-	2	-	-
Subarachnoid haemorrhage	1	-	-	-
Significant paresis	10	7	-	-
Purulent meningitis	-	2	-	-
Deep local infection	-	1	-	-
Somatosensory disturbances	18	21	-	4
Chronic back pain	7	8	1	2

During 1980 – 1984 about 500,000 epidural, intrathecal and caudal blocks were performed in Sweden. Out of 157 complaints 77 were considered well founded as regards the relationship between injury and anaesthetic method; 52 complications were considered to be serious. The cauda equina syndrome appeared in most cases within 24 hours of operation. One year after the injury 27 of 39 patients still had neurological dysfunctions in clinical significance.

Transient Complications:

Spinal headache: was the first complication reported in 1899 by August Bier on his own experience using a Quincke cut needle. In 1979, Kortum et al reported potspinal headache in 34% of 2592 patients. It occurs most frequently in young adults including obstetric patients with an incidence rate of 14% compared to 7% in individuals older than 70years[8].The size of the needle is thought to be of importance. The use of smaller needles with pencil point tip has markedly reduced the incidence of PDPH. Intense headaches occur when CSF escapes through the dural puncture site, resulting in intracranial tension on meningeal vessels and nerves. Treatment with Large volumes of fluid and caffeine intravenously has been tried with success. It does not cause prolonged suffering and the symptoms normally disappear spontaneously within 2-3 weeks.

Bladder disturbance: Transient problems with bladder dysfunction are not unusual. The patient may require bladder catheterization or intermittent emptying of the bladder.

Back pain: Temporary pain is commonly seen after operation with spinal anaesthesia. Unfortunately some patients develop long lasting back-pain, the causal relationship is difficult to interpret. In this connection psychosocial interactions are very common as either cause or effect.

Serious Complications.

The incidence of hypotension: following SA is 10-40%. The hypotension is related to the extent of sympathetic blockade, which is responsible for a decrease in systemic arterioler and venous tone. Cardiac output may fall as a result of decreased venous return[9] consequent to venous dilatation. Hypotension may be exacerbated by bradycardia and sedative drugs. Bradycardia may be due to sympathetic cardiac innervations and vagal stimulation during surgery. Hypoxic brain damage may occur as a consequence of an extreme decrease in blood pressure during regional anaesthesia.

Epidural abscess: has been reported in a frequency of 1:505,000 patients who had epidurals. The incidence is 2:10,000 in patients without regional anesthesia[10].

Anterior spinal artery syndrome: Spinal cord ischemia and Infarction due to anterior spinal artery insufficiency following profound prolonged hypotension after spinal or extradural anaesthesia. The injury occurs more often in the anterior horns and the anterior and lateral columns. Motor activity normally disappears whereas tactile and temperature sense may be retained.

Epidural hematoma: The actual incidence is unknown. It is reported to occur spontaneously in patients who have not received regional anaesthesia[11] and in patients who have received regional anesthesia[12, 13]. In a review of the literature from 1906-1994 by Vandermeulen et al. identified 61 cases of spinal - epidural hematoma, 46 of which were associated with epidural anesthesia. Twenty three of the 46 epidural cases were associated with the use of anticoagulants, 4 were associated with thrombocytopenia and the remaining 19 cases had no risk factors reported. Five of these cases were in pregnant women. Two of these were reported to have thrombocytopenia, 1 had an epidural ependyma and 2 had no identifiable risk factors. Risk factors for epidural hematoma have included difficult or bloody tap, pre existing coagulopathy and use of anticoagulants. The risk of a bloody tap in the obstetric population has been reported to be as high as 18%. Thrombocytopenia is identified as a risk factor, however the platelet count below which it is risky to use regional anesthesia is still somewhat controversial. In the review by Owens et al[9] no patients were identified with hematoma and a platelet count was >50,000. Current dogma uses a platelet count >100,000 as the safe threshold. The symptoms appear gradually and start usually with severe pain in the back. Then there is progressive paresis. If suspected, Myelography and CT scan should be undertaken immediately. Permanent neurological damage may occur if surgical decompression is delayed > 8-12h. When questioning

the use of regional anesthesia for fear of epidural hematoma one must always consider the risks of general anesthesia.

Aseptic meningitis: The most benign neurologic syndrome usually presents within 24 hours of SA and is characterized by fever, nuchal rigidity and photophobia. The genesis is usually unknown. Often it may be due to chemical irritation caused by detergents or disinfectants introduced during needle manipulation. Aseptic meningitis requires only symptomatic treatment and usually resolves within a few days.Arachnoiditis has been seen as a delayed complication.

Septic meningitis: with permanent sequelae is now an unusual complication. Sequelae may be avoided if the patient is treated adequately but persistent adhesive arachnoiditis has in fact be described. Death may occur (kilpatric, 1983) [14].

Adhesive arachonoiditis and chronic adhesive arachonoiditis:

The most serious neurologic complication usually occurs several weeks, months or years after the insult. The syndrome is characterized by pain, a gradual progression of sensory deficits and motor weakness in the lower limbs. Antiseptic solutions and preservatives in the drug solutions have been implicated. Characterized by proliferation of the pia mater followed by fibrosis and stricture of nerve tissue. Demylination of the nerve tissue and the subdural as well as subarachnoid space may become contracted by swollen meninges. Within afew weeks after block myelography shows a narrow spinal canal.Usually seen in connection with intrathecal block but has been observed even after epidural block.Boiardi, et al [15] described four cases. Response to treatment is generally poor.

Cauda equina syndrome: Syndromes of leg weakness, perineal sensory loss, disturbances or loss of sphincter control in the bladder and rectum in addition to erection problems[16]. The cause is not yet established. Possible mechanisms of injury include-direct trauma, intraneural injection, epidural haematoma and high concentrations of local anaesthetics.It has been suggested that cauda equina nerve fibers are more vulnerable to damage because they lack protective sheaths.Symptoms may appear soon after surgery and may be permanent or it may regress slowly over weeks or months[17]. Cauda equina syndrome and adhesive arachnoiditis share a common etiology. Treatment is palliative and is generally of a rehabiliting character. Traumatic injury to the spinal cord and nerve roots is a rare cause of neurologic deficit.

Spinal cord ischemia and infraction may occur after prolonged periods of arterial hypotension[15].

Intracranial hemorrhage: Are a much rarer but decidedly more serious complications of spinal or epidural anaesthesia. There are a few reports most of them are sub-dural haematoma formation[18.] If the headache is atypical or lasts for more than week; CT scan is indicated, especially if treatment with blood patch has proved to be without effect.

With the increasing use of regional anesthesia, providers must be prepared to evaluate patients for neurologic complications. What makes these rare regional anesthesia complications so unsettling is that the risk of permanent neurological damage associated with the technique is often out of proportion to the surgical risk incurred by the patient. However, the benefits of regional anesthesia experienced by the vast majority of patients, particularly from a postoperative pain perspective, justify use of the procedure. The majority of neurologic injuries noted after regional anesthesia are not secondary to the block but result from preexisting conditions, patient positioning, or from the surgery itself. Nevertheless, anesthesia providers will increasingly be called upon to evaluate nerve injury patients for diagnosis and treatment.

Remaining cannula and catheter: Only rarely is the cannula broken in the epidural or subdural space. When this does happen, however, surgical intervention is necessary. The catheter may shear; if it is pulled out of the touhy needle. It has been claimed that the catheter can remain in the epidural space without causing injury.

Total intrathecal block: An experienced anaestghetist will have to accept a 2.5 % accidental dural puncture in the epidural anaestheia and a 1.2% accidental dural puncture with caudal anaesthesia [19],If dural puncture is not discovered there is a risk of total intrthecal block with local anaesthetic injection. The patient then unconscious and develop severe respiratory and cardiovascular collapse. Oxygenation with Intubations and controlled ventilation are normally required in

addition to volume substitution and vasopressors. If treatment is adequate, sequelae rarely occur.

Caudal anaesthesia: Complications are as for extradural anaesthesia but much less common. Insertion of needle into the rectum or presenting part of the fetus has been reported.

The relationship between regional anaesthesia and sequelae: General Consideration

Marinacci and Courville 1958 described 542 patients who had all notified neurological disturbances thought to be caused by intrathecal block. By means of electromyography, however, it was established that only 4 patients could justifiably ascribe their complaint to the block. The incidence of severe neurologic deficit following SA is low. In a prospective study of 40,640 cases of SA, the authors reported as an incidence rate of serious neurological deficits of 0.5 per 10,000. These have been in association with epidural hematoma, epidural abscess, adhesive arachnoiditis, anterior spinal artery syndrome or cauda equina syndrome. When one discusses these complications, it is important to keep in perspective those are of very low incidence. This is worth remembering as both patient and surgeon often blame the damage on the anaesthetic technique. Routine postoperative check up at an early stage to establish the true frequency and nature of complications is one way of preventing a misjudgment of the causal relationship. There is also a need to search for new predictors, triggers and risk factors. The best defense against nerve injury induced by regional anesthesia is following proper procedures: slow, careful needle technique; spare use of epinephrine; and careful physical examination of the patient prior to the block.

Conclusion:

Through continued study, training and experience in regional anesthesia, the significant benefits of this technique can be achieved with maximal safety to patients. Despite the great benefits of regional anesthesia, providers may be tempted to think, "If I had just done a general anesthetic, I would not have this problem." To prevent complications, strict indications should be observed. Pain is an important warning signal. If pain occurs the anaesthetic procedure should be discontinued.

The neurological injury causes the most serious disability.Dignostic tests are of importance at an early stage. Repeated EMG and CT scan are recommended.

Postoperative routines to deal with complications in time comprise an important part of the anaesthetist's work. Who follow up the patient should not forget to refer early to the anesthetist any complaints from the patient. Everybody profits from a swift and detailed analysis of complications.

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Original Article

Effects of intravenous immunoglobulin therapy on patients of guillain barré syndrome in intensive care unit of BSMMU - a retrospective study

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Abstract:
Acute polyneuropathy or Guillain Barré syndrome (GBS) following respiratory, gastrointestinal and other illness cause a world wide morbidity and mortality. Immunotherapy (IgG) is early phase of GBS is supposed to reduce life threatening complications. In our retrospective study in ICU, BSMMU Dhaka from January 2007 to December 2008, we included 43 patients admitted during that time. Among the patients 15 patients who received IgG therapy, 1 (one) patient died and 8 patients died among 28 who did not receive Immunotherapy. Recovery rate was 91.66% among IgG group and 66.67% in non IgG group. Ventilated Patients were 53.33% in IgG group and 71.43% patients were in non IgG group. The average duration of stay was 35 days in IgG group and 39.18 days in non-IgG group. The average duration of stay was 22.57 days in IgG group who received immunotherapy in 0-4 days of onset of symptoms and 45.88 days in who got immunotherapy in 5-8 days of onset of symptoms. It is clearly evident that IgG therapy in early phase of GBS reduces, morality, morbidity and duration of hospital (ICU) stay and IgG therapy in early phase of GBS is a better treatment option.

***Key Words**: GBS, immunoglobulin.*

(Journal of BSA, 2008; 21(2): 72-75)

Introduction:
Guillain Barré syndrome (GBS) is an autoimmune disorder encompassing a heterogeneous group of pathological and clinical states[1]. Antecedent infection (1-3 weeks or longer) vaccination, neural injury are thought to trigger autoimmune response which subsequently cross reacts with nerve leading the demyelination or axonal degeneration. An about 60 percent of cases the major clinical manifestation is paresis and paraplegia of lower limbs which is ascending and often needs intensive care unit support for respiration[2]. The essential points in the therapy of acute severe cases are respiratory assistance and careful nursing, since the disease remits naturally and recovery is complete in majority of cases. But many of the patients become disable or even may die due to fatal complications. The Dutch study group has reported that intravenous immunoglobulin (0.4 g/kg/day for 5 consecutive days) is effective as plasma exchange therapy and has the advantage of immediate availability and greater safety[3]. The Aim of this study was whether early immunotherapy (1st week) reduces hospital (ICU) stay, morbidity and mortality.

Methods:
We have conducted a retrospective study from the patients admitted in the ICU of BSMMU and Millennium Heart and General hospital with the diagnosis of Guillain Barré syndrome. We have identified 43 patients from January 2007 to December 2008. We reviewed the medical records, admission registrar and individual patient files. We have used a structured questionnaire to get the demographic, clinical, laboratory diagnostic, management and therapeutic information.

We used MS access for data entry. We have analyzed data in using the data analysis software SPSS. We have determined P-value as 0.05 as statistically significant.

Results and interpretation:

Among 43 Guillain Barré syndrome patients, 25 percent patients were of age ranges between 10 years to 19 years. Seventy percent was male patients.

Table I

Demographic status

Age	Age classification	No	Percent
	lowest through 9 years	8	18.6
	10 - 19 years	11	25.6
	20 - 29 years	8	18.6
	30 - 39 years	6	14.0
	40 - 49 years	4	9.3
	more than 50 years	6	14.0
Sex	Male	30	69.8
	Female	13	30.2

Clinical parameters included prodromal symptoms and onset of motor weakness. Total 20 patients (46.5%) had prodromal symptoms (for example fever, diarrhea) one to four weeks prior the gradual onset of muscle weakness. Typical presentation of lower limb muscular weakness had been seen in 81 percent patients. Twenty eight patients develop paralysis in respiratory muscles and eventually diagnosed as impending respiratory failure.

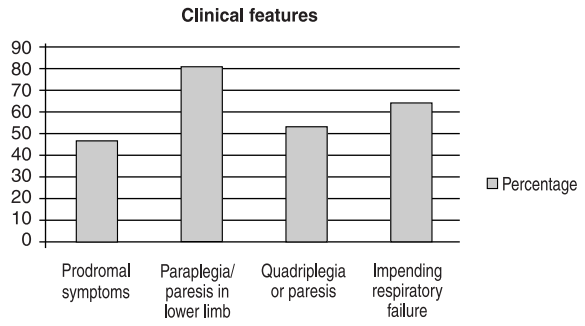

Fig.-1: *Clinical characteristics*

Immunoglobulin had been administered in 15 patients. All the 28 patients had been developed respiratory failure were undergone mechanical ventilation. However, fifteen patients failed to wean from mechanical ventilation and extubation, therefore tracheostomy was performed in those patients.

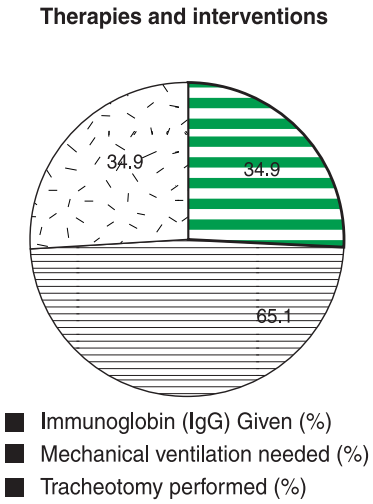

Fig.-2: *Therapies and interventions*

Immunoglobulin therapy administration influences length of ICU stay. Among 43 GBS patients 15 patients were given IgG. Those who have received immunoglobulin have lower hospital stay (35 days) in comparison to those who have not got immunotherapy (39.8 days).

Table - II

Clinical characteristics of the participants based on immunoglobin (IgG) therapy

	IgG received (n= 15) in percent	IgG not received (n= 28) in percent
Clinical Presentations		
Prodromal symptoms	46.66	46.43
Lower limb paralysis	86.66	78.57
Quadriplegia	53.33	53.57
Respiratory failure	60	67.86
Speech disturbance	13.33	17.86
Cranial neuropathy	2.1	28.6
Sensory deficit	20	3.6
Relevant investigations		
Nerve conduction test Performed	6.67	3.57
Cerebrospinal fluid study Performed	20	32.14
Performed procedures		
Ventilation	53.33	71.43
Trachestomy	20	42.86
Outcomes		
Complications	6.66	28.57
Co-morbidities	13.33	28.57
Recovery*	91.66	66.67

* Prognostic value assessed.

Table - III

Intervening procedures and care pattern of the participants based on immunoglobulin (IgG) therapy.

	IgG given (n=15) in mean value ± SD	IgG not given (n=28) in mean value ± SD	P-value
Age in years	26.27 ± 21.55	28.07 ± 19.52	0.78
Days of hospitalization*	35 ± 37.83	39.18 ± 33.59	0.71
Admission delay after onset of illness in days	7.13 ± 8.95	8.52 ± 7.42	0.61

*Prognostic value assessed.

Table - IV

Intervening procedures and care pattern of the participants in two groups of immunoglobulin (IgG) therapy

	IgG in 0-4 days in mean value ± SD	IgG in 5-8 days in mean value ± SD	P-value
Age of patients	22.29 ± 20.81	29.75 ± 22.96	0.52
Days of hospitalization*	22.57 ± 18.46	45.88 ± 47.75	0.23
Interval between ventilation and IgG therapy in days	0.8 ± 1.57	1.25 ± 3.9	0.62
Admission delay after onset of illness in days*	2.71± 1.98	11.00 ± 10.98	0.07

*Prognostic value assessed.

Immunoglobulin had been administered in 15 patients and 91 percent recovered. Twenty patients recovered and eight patients had died among 28 patients who had not received immunoglobulin. Endotracheal intubation and mechanical ventilation had been performed in 28 pateints. Eight patients had been ventilated among 15 patients who received immunoglobulin. Seventy one percent patients were mechanically ventilated but did not receive any IgG therapy.

Among 15 patients who received immunoglobulin, mean duration of immunoglobulin initiation after hospitalization was 4.2 days; therefore those who received immunoglobulin were divided into 0-4 days and 5-8 days. Immunoglobulin therapy administration influences length of ICU stay. Among 43 GBS patients 15 patients were given IgG. Those who have received immunoglobulin earlier have lower hospital stay (22.57 days) in comparison to those who have not got immunotherapy (45.88 days).

Discussion:

Immunotherapy in early phase of Guillain Barré syndrome hasten recovery, reduces mortality and morbidity. The Dutch study group has reported that intravenous (I/V) administration of immunoglobulin (0.4g/14 for 5 consecutive days) is effective as plasma exchange (PE) and has the advantages of immediate availability and greater safety[3]. In our study 15 patients received immunotherapy out of 43 patients and only patient died and 28 patients did not get immunotherapy 8 patients died which signifies more number of deaths in those who did not received immunoglobulin. Recovery rate was 91.66% among IgG group 66.47% in non IgG group. In IgG group 53.33% patients were ventilated and 71.43% were in non-IgG group. The average duration of stay is 35 days in IgG group and 39.18 days in non-IgG. The average duration of stay 22.57 days in IgG group who received immunotherapy in 0-4 days of onset symptom and 45.88 days in who got immunotherapy in 5-8 days of onset of symptom. Hughes et.al reported I/V IgG hasten recovery in non-ambulant GBS with in 14-28 days of symptoms[4]. In the Dutch trial pneumonia, atelectasis, haemodynamic disturbance occurred more after with plasma exchange therapy than I/V IgG therapy[3]. But we did not go for plasma exchange (PE) therapy. Gürses et al. reported with IgG therapy seven of nine children recovered completely [5,6,7]. Combination treatment with I/V IgG and PE does not have

superior effect than treatment regime given alone[4]. Similarly a combined evidence from trials show no benefit from corticosteroid therapy and the results of a trials of the methylprednesolne is still awaiting[8].

So it is evident that I/V IgG therapy alone in early phase of GBS is a better option for treatment. Although the results of our study were not statistically significant (may be due to small sample size), but it is clinically proved that immunotherapy in early phase of GBS reduces mortality, morbidity, duration of hospital (ICU) stay in terms of percentage and mean. Immunotherapy is effective in GBS patients in Bangladesh as shown in other studies in different countries[3-7].

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Case Report

Thoracic epidural anaesthesia for thymectomy in myasthenia gravis

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Abstract

Myasthenia gravis is a disease of great significance to the anaesthesiologist, because it affects the neuromuscular junctions. Many patients with this condition are treated by surgical thymectomy. Thymectomy for myasthenia gravis requires special attention as far as the type of anesthesia and use of muscle relaxants. We use high thoracic epidural anaesthesia for trans-sternal thymectomy to avoid the use of muscle relaxants and volatile anesthetic agents which prevented the laryngeal injury and potential post-operative respiratory failure.

***Key words :** Myasthenia gravis, Thymectomy.*

(Journal of BSA, 2008; 21(2): 86-87)

Case report

A 40 years old 50 Kg female patient was admitted into a private clinic for thymectomy. She was diagnosed as a myasthenia gravis. Her medical management included pyridostigmine and corticosteroids for controlling her symptoms. In this case we decided to perform the operation under thoracic epidural anaesthesia (TEA). We discussed the procedure with the patient. After taking informed consent on the day of surgery, early in the morning the patient was pre-medicated with 7.5 mg midazolam orally 1 hour before arrival at operation theater. A thoracic epidural catheter was inserted at the T_1 and T_2 level under local anaesthesia using 18G Tuohy needle with patient in sitting position through midline approach using hanging drop technique. The block level was tested by 3ml 2% lignocaine.

Anaesthesia was induced with a mixture of 8 ml of 0.25% bupivacaine + 7 ml of 1% lignocaine + 25µg fentanyl citrate administered through the epidural catheter as a bolous. After 20 minutes the onset of anaesthesia was completed and level of block was tested by pin-prick discrimination. The upper level of block was C_6 and the lower level was T_{10}. The patient breathed 6 liters of Oxygen per minute using a face mask. The patient was continuously monitor by Intra-Arterial Blood Pressure, ECG, SpO_2, ABG analysis, S. Electrolytes, Respiration and Urine output. The mean operating time was 1 and 1/2 hour and the patient was able to drink within 1 hour after operation. Post-operative analgesia was maintained with 0.125% bupivacaine 4 ml and fentanyl citrate 1 µg/ml through epidural catheter 6 hourly. No other recue analgesia was required.

Discussion

Trans-sternal thymectomy in awake patient without general anaesthesia was performed with high thoracic epidural anaesthesia. Thoracic epidural anaesthesia is also have been perform in awake CABG on beating heart. TEA provides excellent conditions for thymectomy in myasthenic patient because general anaesthesia require muscle relaxant which may need to prolonged post-operative ventilation of the patient and increased chances of post-operative respiratory failure[3,4]. TEA was advantageous in that- avoidance of muscle relaxants and volatile anaesthetic agents prevented the laryngeal injury and potential post-operative respiratory failure[1,2]. So, ultimately the choice of anaesthetic technique depends on patient's suitability, preference of the surgeon and anaesthetist's experience and expertise.

Conclusion

Use of TEA for awake thymectomy was feasible and the patient was maintained with good analgesia, stable cadio-respiratory and haemodyanamic status,

early ambulation, oral feeding, better post-operative analgesia and reduced peri-operative morbidity.

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