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Surgical Management of Abdominal Aortic Aneurysm:Study From A Tertiary Care Hospital, Guntur.

[1]Dr.Dasari Kalyani Rama,[2]Dr.S.Seetha Ramaiah,[3]Dr.N.Syama Kumar, [4]Dr.Sunkulasriharsha, [5]Dr.B.Trinath Kumar, [6]Dr.B.Venu Gopalan, [7]Dr.Sandhya, [8]Dr.K.Manohar, [9]Dr.Shivani

[1]MS Mch(Cardio Vascular andThoracic Surgery), Assistant Professor, Department of Cardio Vascular and Thoracic Surgery, Government General Hospital, Guntur Medical College, Guntur, Andhra Pradesh.
[2]Prof & HOD, Department of Anaesthesia, Government General Hospital, Guntur Medical College, Guntur, Andhra Pradesh.
[3]Assistant Professor, Department of Anaesthesia, Government General Hospital, Guntur Medical College, Guntur, Andhra Pradesh.
[4]Assistant Professor,Department of General Surgery, Government General Hospital, Guntur Medical College, Guntur, Andhra Pradesh.
[5]Assistant Professor, Department of Anaesthesia, Government General Hospital, Guntur Medical College, Guntur, Andhra Pradesh.
[6]Assistant Professor, Department of Anaesthesia, Government General Hospital, Guntur Medical College, Guntur, Andhra Pradesh.
[7]Assistant Professor, Department of Anaesthesia, Government General Hospital, Guntur Medical College, Guntur, Andhra Pradesh.
[8]3rd year Post Graduate, Department of General Surgery, Government General Hospital, Guntur Medical College, Guntur, Andhra Pradesh.
[9]3rd year Post Graduate, Department of General Surgery, Government General Hospital, Guntur Medical College, Guntur, Andhra Pradesh.
Corresponding author: Dr.Dasari Kalyani Rama, Mail id: dr.kalyanirama@gmail.com

Abstract
Introduction*: Abdominal aortic aneurysms (AAA) are mostly asymptomatic but have a very high chances of mortality in case they rupture. Ultrasonography is nearly 100% sensitive and specific in detecting abdominal aortic aneurysms.* ***Material & Methods****: The present hospital based observational study was conducted in the Department of Cardiovascular and Thoracic Surgery, Government General Hospital, Guntur Medical College, Guntur. Study period was from November 2017 to June 2018. Abdominal ultrasonography and axial non contrast computerized tomography (CT) were done in all the patients. All the patients underwent open abdominal aortic aneurysm resection and grafting.* ***Results****: Total number of patients with Abdominal aortic aneurysms during the study period were five. Out of whom, three were males and two females with mean age being 65.6±5.08 years. All five patients had hypertension. Mean size of aneurysm was 6.4±0.44. Surgical procedure was done under general or thoracic epidural/spinal anesthesia. A midline incision was used and the aneurysm was opened and any thrombus is removed. A graft (dacron) is anastomosed to either end of the affected section. All five patients had patent graft on discharge ultrasonography. The mean number of days of hospital stay was 10.8±0.8 days with no hospital mortality.* ***Conclusions****: Evidence suggests that men are morelikely than women to develop an abdominal aortic aneurysm. Risk of death from an AAA rupture canbe reduced by early diagnosis, monitoring(U/Scan) and surgical repair of the aneurysm if itis >5.5 cm in diameter.*

Keywords*: Abdominal aortic aneurysms, ultrasonography, surgical management, graft*

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I. Introduction

Aortic diseases are becoming more common as the population ages accounting for significant cardiovascular morbidity and mortality. Of the numerous clinical conditions, abdominal aortic aneurysm constitutes the most common of aortic diseases [1].

Existing literature says that the incidence of abdominal aortic aneurysm is more common in elderly with most patients being 55-65 years age group with male preponderance. Risk factors include co morbidities

such as hypertension, chronic obstructive pulmonary disease and smoking[1]. Abdominal aortic aneurysms (AAA) are mostly asymptomatic but have a very high chances of mortality in case they rupture. The clinical presentation of abdominal aortic aneurysm usually manifest dyspnea, palpitations, loud continuous murmur and pulsatile abdominal mass. About 40% are detected incidentally while being evaluated for other causes[2].

Ultrasonography is nearly 100% sensitive and specific in detecting abdominal aortic aneurysms in patients who are asymptomatic and is the initial preferred diagnostic modality. Computerized tomography (CT) of the abdomen is also performed for delineation of surgical anatomy[3, 4].

The frequency of imaging for depends on the size of the aneurysm. If the size is 3-3.4 cm, then imaging every 3 years; if 3.5-4.4 cm then every year; if between 4.5-5.4 cm then imaging every six months is recommended. And if size of aneurysm is ≥5.5 cm, then repair if fit. Hence the threshold for AAA repair is ≥5.5 cm [5,6]. Surgical open repair and endovascular repair with stenting remain the only treatment for AAA in recent days [4].

The objective of the study was to review the experiencein the management of abdominal aortic aneurysmin Government General Hospital, Guntur Medical College, Guntur.

II. Material and Methods:

The present hospital based observational study was conducted in the Department of Cardiovascular and Thoracic Surgery, Government General Hospital, Guntur Medical College, Guntur.

It was intended to review the experience in the management of abdominal aortic aneurysm from the institute from November 2017 to June 2018.

An informed consent was taken from all the patients and proper counseling was given to them prior to the start of the study.

Initial clinical assessment was done along with routine investigations including complete hematologic and biochemical investigations. Respiratory evaluation was also done. Abdominal ultrasonography and axial non contrast computerized tomography (CT) were done in all the patients. All the patients underwent open abdominal aortic aneurysm resection and grafting.

Surgical procedure was done under general or thoracic epidural/spinal anesthesia. A midline incision was used and the aneurysm was opened and any thrombus is removed. A graft (dacron) is anastomosed to either end of the affected section. A Proximal control– clamp the Aorta (preferably below the renal arteries) and Distal control with clamp at the common iliac arteries was made. Then clamps were removed and blood flow is returned.

A predesigned proforma was used to get the relevant information. The basic demographic data, history of diabetes or hypertension, clinical data, type of aneurysm, post-operative outcome, length of hospital stay and other required details were collected.

Statistical analysis was done by using Microsoft Excel 2010 and EPI INFO 7 version. Data was presented in percentages and proportions.

III. Results

Total number of patients during the study period diagnosed and treated for abdominal aortic aneurysm were 5. The mean age was 65.6±5.08 years indicating an advanced age more commonly being affected. A slight male preponderance was observed with 3 males and 2 females.

With regards to co morbidities, all 5 cases were hypertensive patients and one patient had diabetes.

Other risk factors observed in the present study were smoking which was seen in 3 patients and Chronic Obstructive Pulmonary Disease (COPD) which was also present in 3 patients. None of the cases had any history of any stroke or any family history of abdominal aortic aneurysm.

Table 1: Demographic and clinical characteristics

Characteristic	**Number**
Total no. of patients	05
Sex distribution Male Female	 03 02
Mean age (years)	65.6±5.08
Hypertension	05
Diabetes mellitus	01
Smoking	03
COPD	03

Table 2: Characteristics of Abdominal Aortic Aneurysm (AAA)

Characteristic	**Number**
Type of Aneurysm	
Fusiform	01
Saccular	02
Pseudo	02
Mean size of AAA (in cm)	6.4±0.44
Graft flow intra/ postoperatively	
Patent	05
Discharge USG	
Graft Patent	05

With regards to abdominal aortic aneurysm characteristics, Saccular and Pseudo form of aneurysms were seen in 2 cases each and 1 patient had fusiform type of aneurysm. Mean size of aneurysm was 6.4±0.44 cm.

Surgical procedure was done under general or thoracic epidural/spinal anesthesia. Open surgery done in patients with ruptured aneurysms and to those patients who presented with shock.

Aneurysm resection and grafting surgery was done. A midline incision was used and the aneurysm was opened and any thrombus is removed. A graft (dacron) is anastomosed to either end of the affected section.

A graft flow intra or post operatively was patent in all 5 patients. Post operatively all five patients had patent graft on discharge ultrasonography.

Outcome:

No post-operative complications were observed among the patients. With regards to hospital stay, the mean number of days of hospital stay was 10.8±0.8 days with no hospital mortality.

IV. Discussion

The incidence of abdominal aortic aneurysms (AAAs) has increased during the past few decades, due in part to the aging of the population, the rise in the number of smokers, the introduction of screening programs, and improved diagnostic tools[7].

Important risk factors for AAA are advanced age, male gender, and smoking. A positive family history for AAA, especially first-degree male relative, is also associated with four times increased risk of AAA[8].Additionally, history of other vascular aneurysms, greater height, coronary artery disease, cerebrovascular disease, atherosclerosis, hypercholesterolemia, and hypertension have been found to have association with AAA, although data for some of these factors are inconsistent[9,10].

The present hospital based observational study conducted in the Department of Cardiovascular and Thoracic Surgery, Government General Hospital, Guntur Medical College, Guntur which is a tertiary care centre with an objective of the study was to review the experience with in the management of abdominal aortic aneurysm.

In the present study, advanced age, male sex, smoking, hypertension were identified as important risk factors in abdominal aortic aneurysm. Aneurysm resection and grafting surgery was done in all patients with no post-operative complications and no mortality with all patients having patent graft on discharge.

A prevalence and risk factors study on abdominal aortic aneurysm by Singh K et al[11] observed that the mean infrarenal aortic diameter increased with age. The increase was more pronounced in men than in women. The age-related increase in the median diameter was less than that in the mean diameter. An aneurysm was present in 263 (8.9%) men and 74 (2.2%) women ($p < 0.001$). The prevalence of abdominal aortic aneurysm increased with age. No person aged less than 48 years was found with an abdominal aortic aneurysm. Persons who had smoked for more than 40 years had an odds ratio of 8.0 for abdominal aortic aneurysm compared with never smokers. Low serum high density lipoprotein cholesterol was associated with an increased risk for abdominal aortic aneurysm. Antihypertensive medication was significantly associated with abdominal aortic aneurysm, but high systolic blood pressure was a risk factor in women only.

A fifteen year population based study of abdominal aortic aneurysm in Finland by Matti T et al[12] found that the mean age was 71.5 years with male preponderance. 87.2% were males. 66.8% underwent open repair and 33.3% endovascular aneurysm repair (EVAR). There was a decreasing trend in the incidence of of abdominal aortic aneurysm during the 15 year study period.

V. Conclusion

Evidence suggests that men are morelikely than women to develop an abdominal aortic aneurysm. Risk of death from an AAA rupture canbe reduced by early diagnosis, monitoring(U/Scan) and surgical repair of the aneurysm if itis >5.5 cm in diameter.

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