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### Case Report

## Is 'Group and Save' Blood Request Routinely Required for Nasopharyngeal Biopsy?

### Abstract

**Objectives:** To establish our current practice of 'group and save' blood for nasopharyngeal tumour biopsy (NB), and to determine the rate of blood transfusions among patients who underwent NB under general anaesthesia.

**Methods:** A retrospective chart review of all patients who underwent biopsy of NB in our tertiary institution between January 2006 and December 2015 was undertaken. Those with Juvenile nasopharyngeal angiofibroma were excluded. Data retrieved included patients' characteristics such as age/sex, anaemia, primary tumour extension, and histology. Outcome measures included rate of 'group and save blood' requests, intra-operative blood loss, blood transfusion rates. Comparison was made between those that were requested to group and save blood prior to surgery (group 'A') and the group 'B' that were not so requested.

**Results:** We analysed eligible 103 cases (71 males and 32 females) out of 121 nasopharyngeal biopsies over the study period. 'Group and save' blood was undertaken in 47.6% (49/103) of our patients. Only 12.2% of the requested blood was transfused. Among evaluated patient characteristics, only oropharyngeal tumour extension differ between the study groups ( $P = 0.025$ ). Overall, 14% had significant intra-operative blood loss (>500mls), while 9.7% were transfused. The rates of blood loss and transfusion were not significantly different between the study groups ( $P = 0.22$  and  $0.09$  respectively). Significant factors that influenced transfusion were pre-operative anaemia and oropharyngeal tumour extension.

**Conclusion:** There was high rate of arbitrary request for 'group and save blood' prior to NB in our institution over the last decade, which seems largely unnecessary. We recommend it be undertaken only in the presence anaemia and extensive oropharyngeal tumour extension.

### Introduction

Although serious primary and reactionary haemorrhages are known to occur following biopsy of some nasopharyngeal tumours, such haemorrhage is rarely seen with most benign and malignant tumours of the nasopharynx. Several reports have described the bleeding propensity of juvenile nasopharyngeal angiofibroma (JNA) [1-3]. There is always a risk of massive bleeding during attempt at obtaining biopsy specimen or surgical excision of this apparently benign, but locally invasive highly vascular nasopharyngeal tumour [1,2]. It is estimated that blood loss during surgical excision of JNA ranges from 200-5000mls [3]. Fortunately this tumour is very rare, in the range of 1:150000 [2], occurring almost exclusively in adolescent and young males. Majority of nasopharyngeal tumours are malignant, with nasopharyngeal carcinoma (NPC) constituting 70-80% of the nasopharyngeal malignancies

[4,5]. These malignant masses are usually not prone to massive haemorrhage at biopsies. However in view of the perceive fear of morbid bleeding of JNA, most anaesthetists in our practice insist on blanket procurement of blood preoperatively as a safe measure against unexpected bleeding during a number of biopsies for nasopharyngeal tumours. In our experience, this has often resulted in unnecessary contentions between the otolaryngology and the anaesthetic teams, with resultant cancellation of cases and delays, as well as additional cost to the patients. The outcomes of these contentions are often dependent on the ability of surgeon to argue his case, or sometimes, on the personal relationship with the particular anaesthetist. Majority of our patients who were asked to group and save blood prior to nasopharyngeal biopsies (NB) were never eventually transfused, and no audit has been carried out to evaluate the usefulness, or otherwise of this practice. This study was therefore carried out to establish our current practice

of 'group and save' blood for NB, as well as to determine the blood transfusion rates among patients who underwent NB under general anaesthesia.

### Subjects and Method

We conducted a retrospective analysis of 103 Patients (71 males and 32 females) that underwent NB in our department between January 2006 and December 2015.

### Ethical considerations

The study protocol was approved by our institutional ethical review committee.

### Study protocol

The patients' data were retrieved from the registers of ENT out-patient clinics, theatre registers and patients case notes. All the cases with available histology results that underwent nasopharyngeal biopsy under general anaesthesia were included. The few that had endoscopic biopsy in the outpatient clinics under local anaesthesia were disregarded since the focus was to examine blood transfusion requests that are practice predominantly during general anaesthesia. Those excluded from analysis were those that showed derangements of clotting profile on preoperative work up, and those with histological diagnosis of JNA. Data extracted included their demographic information, documented symptoms and clinical signs, plain x-ray and/or computed tomography (CT) imaging records, disease staging, histology results, request for group and save blood, reasons for such request, estimated blood loss records, intra-operative/postoperative blood transfusion records, and duration of hospital stay.

### Data analysis

It was conducted using the SPSS statistical software (version 16.5; IBM Corp) Chi-square and Fisher Exact test were used to find the significance of study parameters on categorical scale between two or more variables. T-test was used to compare means of numerical variables. Statistical significance was set at P value of < 0.05

### Results

The records of 136 patients who were diagnosed with nasopharyngeal tumours at the out-patient clinics over the study period were identified. Nasopharyngeal biopsies were carried out in 121 patients under general anaesthesia. The rest did not turn up for subsequent management after their initial contact. Out of the 121 biopsied cases, the records of 9 patients were not available. The histology of 5 patients revealed non-specific inflammation, whereas the available haematological workup of 3 patients showed clotting profile derangements. There was one case of JNA confirmed at histology. We therefore analysed 103 cases that met our inclusion criteria. There were 71 males (69%) and 32 females, with M:F ratio of 2.2:1. Their mean age was  $40.2 \pm 18.2$  years, and ranged from 3-77 years. The patients were analysed in two groups: 'Group A' 49 (47.6%) represented those that were requested to save blood

prior to NB, whereas cases in 'group B' 54 (52.4%) were not so requested. Table 1 outlined the patient characteristics in both groups. Apart from primary tumour extension to oropharynx, both groups did not differ significantly in all the evaluated characteristics. They did not also differ regarding the presence of anaemia (P = 0.395). However patients in group A were more likely to have extensive primary tumour (P = 0.025).

The various reasons for blood request were outlined in Table 2. Advanced primary tumour dominated the reasons for blood request (43%). Regardless of whether patients were requested to save blood or not, Table 3 shows no significant difference in the amount of blood loss between the two groups (P = 0.217). The records of blood transfusion among the patients were also outlined in Table 3. Overall, 9.7% of our patients were transfused, 7 were intra-operatively, while the remaining 3 patients were transfused during the immediate postoperative period. The transfusion rates in the groups A and B subjects were 12.2% and 7.4% respectively. The difference in the transfusion rates between the study groups was not significant (P = 0.094). Majority of the transfused subjects

**Tables 1:** Patients Characteristics in Relation to the Study Groups.

	*Group A	** Group B	P value
Male/Female	36/13	35/19	0.683
Age (years)			
<20	4	6	
20-30	9	8	
31-40	15	12	
41-50	8	18	
>50	13	10	
mean age	40.7 ± 19.7	39.8 ± 16.9	0.833
Primary tumour extension			
Propharynx/palatal bulge	21	16	
limited to nasopharynx	28	38	0.025
Co-morbidities			
significant nose bleeding	13	10	0.278
anaemia	7	5	0.395
respiratory distress	4	11	0.239
Histology			
nasopharyngeal carcinoma	37	42	
lymphoma	6	9	
rhabdomyosarcoma	2	0	
***benign adenomas	4	3	0.558

\* 'group and save' request group; \*\*non request group; \*\*\* pleomorphic adenoma, papilloma

**Table 2:** Reasons for 'Group and Save' Blood Requests N = 49.

Reasons	Number of patients	Percentage
History of significant nose bleeding	13	26.5%
Extensive primary tumour	21	42.9%
Preoperative anaemia	7	14.3%
Unspecified	8	16.3%

**Table 3:** The Analysis of Peri-operative Blood Loss and the Frequency of Blood Transfusion among the Study Groups.

	Study Groups		
	*group A	**group B	
Estimated peri-operative blood loss			
<200 mls	13	11	
200-500mls	23	27	
>500mls	5	7	<i>P</i> = 0.217
Total	41	45	
Peri-operative Blood Transfusion			
≤2 units of blood	5	2	
>2 units of blood	1	50	<i>P</i> = 0.094
No transfusion	43	54	
Total	49		

(80%) had some levels of anaemia pre-operatively. Seven of the patents that received blood transfusion were among those with oropharyngeal tumour extension (18.9%), compared to 4.4% transfusion rate among those whose primary tumours were limited to the nasopharynx (*P* = 0.001). The transfusion rate did not differ significantly between the 23 patient with significant nose bleeding and those without such bleeding (*P* = 0.141).

## Discussion

The emergence of the acquired immunodeficiency syndrome (AIDS) as well as risk of transmission of hepatitis B and C viruses has fuelled concerns of both physicians and their patients about safety of blood transfusions. The administration of homologous blood transfusion is recently undergoing more critical rationalization in health care managements of diseases [6,7]. Most surgeons now employ stringent criteria before such transfusions are administered to their patients even for major surgeries [8,9]. These days, several peri-operative blood conservative techniques which are geared towards minimizing blood transfusion during surgical procedures, are widely being employed [9–11].

Despite the current global trends, it is of interest to observe that the practice of procurement of blood prior to nasal and pharyngeal surgeries, such as tonsillectomies, nasal clearance/biopsies and nasopharyngeal biopsy are still the subject of debate between the anaesthetic and the surgical teams in our institution. Often the outcomes of such debates are hinged on the arbitral decisions of the anaesthetist. In this present study, we attempted to critically examine the justification routine request for group and save blood for nasopharyngeal biopsy of suspected NPC over the last 10 years in our tertiary institution.

We observed that at least 2 units of blood were procured in each of the 49(48%) patients who underwent nasopharyngeal biopsies. Out of this number, only 12.2% were eventually transfused during the intra-operative and immediate post-operative periods. Our overall transfusion rate was even less than 10%.

The implication is that about >87% of all saved blood for

NB in our institution over the last decade was rather needless. This therefore calls to question the rationale behind these requests. However one may argue, as is often championed by the anaesthetists, that the need for precaution should dominate other considerations. In as much as the above may be correct, there is however compelling need to consider the enormous cost burden on our patients who often find it difficult to pay for the cost of the biopsy with attendant delays, resulting in late presentations at advanced stages of the disease. In this study, 36% of our patients had primary tumours extending to the oropharynx at presentation. In view of non-existent/poorly implemented health insurance scheme in our society at the moment, large majority of our patients are always faced with the challenges of out-of-pocket funding of all cost of surgical procedures including ancillary costs, such as procurement of blood. Many of our patients were lost to follow up after initial probably on account of cost. Some found it difficult to meet the cost of procuring even 1 unit of blood, and ended up delaying for additional number of weeks before they could come up with the requested 2 units of blood.

Although oropharyngeal tumour extension constitute the major reason for the requests to save blood and seems to correlate with transfusion, we found that a huge number of the affected patient did not require blood transfusion. It is understandable why oropharyngeal tumour extension formed the major reason for the request blood prior to NB. The extension of huge nasopharyngeal mass to the oropharyngx often paints a grotesque picture with the tendency to creating a scare to the uninitiated. Contrary to the perceived fear of haemorrhage, the real danger is often the challenge of securing the airway during anaesthesia which should rightly be the concern of the anaesthetic team.

There seem to be no significant difference in the patients' characteristics between those requested to group and save blood and those that were not. This observation highlights arbitrariness in the requests to save blood for NB in our institution.

In conclusion there was high rate of request for 'group and save blood' prior to NB in our institution over the last decade. The requests were mainly arbitrary, regardless of the histology of the nasopharyngeal mass, but majorly influenced by oropharyngeal extension of mass. Only a small percentage of the requested saved blood (13.9%) was transfused in the end.

## Conclusion

Our study showed high rate of unnecessary request for 'group and save blood' prior to NB in our institution over the last decade. In the absence of suspicion for juvenile nasopharyngeal angiofibroma and bleeding diathesis, the request for 'group and save blood' should be reserved for patient with significant anaemia and those with extensive oropharyngeal primary tumours extension, so as to avoid largely unaffordable needless additional cost of saved blood before nasopharyngeal biopsies regardless of history of nose bleeding.

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